

Appendix II

In re Young, 927 F.2d 588, 18 U.S.P.Q. 1089 (Fed. Cir. 1991)

n v. Phoenix Mut. Life Ins. Co., 300 47, 262, 266 S.E.2d 610, 620 (1980).
 owing that instruction, it is noteworthy that we have found no Federal Trade Commission Act cases involving enforcement of patent rights. That may be due to the fact that a patentee's need to enforce his right in court overrides unfair competition suits. Good faith patentees have a "right to exclude others from making, using, and selling the invention and to enforce those rights until [their patent is] held invalid [or rescinded]." *Concrete Unlimited, Inc. v. Cecraft, Inc.*, 776 F.2d 1537, 1539, 227 Q 784, 785 (Fed. Cir. 1985), cert. denied, 479 U.S. 819 (1986). "[A]ny patent holder has the right to . . . enforce its patent, which includes threatening alleged infringers with suit. See 35 U.S.C. §281." *Id.* However, that right is not unbounded. *Murphy and OnSite Systems, Inc. (OnSite)* argue that Mirafi's law suit was an unfair trade practice because it was a "mere sham." *United States v. Ward*, 618 F.Supp. 1, 907 (E.D.N.C. 1985), states that "the initiation of a lawsuit may be the basis for unfair trade practices claim if the lawsuit is a mere sham to cover what is actually something more than an attempt to interfere directly with the business relationships of a competitor." Although nearly all patent infringement suits are an attempt to interfere with the business relationships of a competitor, most are not mere shams; they are conducted with a good faith expectation of winning.

Conversely, "infringement actions initiated and conducted in bad faith contribute nothing to the furtherance of the policies of either the patent law or the antitrust law." *Loctite Corp. v. Ultraseal Ltd.*, 781 F.2d 361, 876, 228 USPQ 90, 100 (Fed. Cir. 1985). As such, bad faith litigation, where a patentee initiates litigation on a patent he knows is invalid or is not infringed, *id.* at 875-76, 228 USPQ at 99-100, is conduct offensive to public policy.

[3] Unfair conduct under the North Carolina Unfair Competition Statute has been defined as that which offends established public policy and is immoral, unethical, oppressive, unscrupulous, or substantially injurious to consumers. *Johnson*, 300 N.C. at 263, 266 S.E.2d at 621 (citing *Spiegel, Inc. v. Federal Trade Comm'n*, 540 F.2d 287, 293 (7th Cir. 1976)). Thus, bad faith infringement litigation, because it offends public policy and is either immoral, unethical, oppressive, unscrupulous, or substantially injurious to consumers, could violate North Carolina's Unfair Competition Statute.

Proof of patentee's bad faith must be made by clear and convincing evidence. *Loctite*, 781 F.2d at 876, 228 USPQ at 100 (citing *Handgards, Inc. v. Ethicon, Inc.*, 601 F.2d 986, 996, 202 USPQ 342, 351 (9th Cir. 1979), cert. denied, 444 U.S. 1025 (1980)). Moreover, where there is a belief in infringement as well as validity by the patentee, there is a presumption of good faith. *Loctite*, 781 F.2d at 877, 228 USPQ at 101. Furthermore, a patentee is normally entitled to rely on a presumption of validity. 35 U.S.C. §282 (1988).

The district court found "a continuing course of conduct pursuant to which Mirafi not only initiated this litigation in bad faith, but engaged in a series of extra-judicial acts, both before and after the actual filing of the litigation, with the purpose, intent and effect of unfairly damaging Murphy and OnSite and secondarily Swanger, in the marketplace." (Conclusion of Law #25, A43). Having thoroughly reviewed the record, this court concludes that the district court's finding of bad faith litigation, which must be supported by clear and convincing evidence is clearly erroneous.

Here, without a determination of whether Mirafi knew the '765 patent was invalid or knew that appellees did not infringe the '765 patent, there can be no bad faith litigation. Moreover, all of Mirafi's extra-judicial activities, including notifying customers and potential customers of the litigation, are within the purview of actions a party with rights to enforce a patent may engage in to enforce the patent. See *Concrete Unlimited*, 776 F.2d at 1539 ("[T]aking business away from the Defendant by threats and infringement actions" is not necessarily unfair competition. Good faith patentees have "the right to exclude others from making, using, and selling the invention and to enforce those rights until the . . . patent [is] held invalid [or expires]." Evidence of prior intent not to litigate the patent, failure to litigate infringement claims against other parties, and communication with a sales force of intent to litigate and actual initiation of suit are all permitted activities. None offend public policy.

We likewise find Swanger's assertion that trial evidence clearly indicates that Mirafi had no expectation of winning and that the lawsuit was filed primarily for the purpose of destroying a competitor's reputation in the market to be unpersuasive. Having carefully reviewed the record, this court finds no evidence that Mirafi did not expect to win the suit against Swanger.

We therefore remand this issue to the district court for a determination of whether

there is clear and convincing evidence that Mirafi initiated litigation knowing the '765 patent was invalid or knowing that appellees did not infringe the '765 patent.

In view of our decision, the infringement issue is moot and that of damages is premature.

AFFIRMED-IN-PART, REVERSED AND REMANDED-IN-PART.

COSTS

No costs.

Court of Appeals, Federal Circuit

In re Young

No. 90-1368

Decided March 5, 1991

PATENTS

1. Patentability/Validity — Obviousness — Relevant prior art — In general (§115.0903.01)

Apparently conflicting prior art references must, in making obviousness determination, each be weighed for their power to suggest solutions to artisan of ordinary skill, and all disclosures in prior art must be considered to extent that they are in analogous fields of endeavor and thus would have been considered by person of ordinary skill in field of invention; in weighing suggestive power of each reference, degree to which one reference might accurately discredit another must be considered.

2. Patentability/Validity — Obviousness — Relevant prior art — Particular inventions (§115.0903.03)

Applicant's claims for method of generating seismic pulse in water by use of at least three air guns disposed at critical distance from each other are obvious in view of prior patent which expressly teaches exact spacing set forth as limitation in each of applicant's claims, even though additional reference purporting to test different methods of pulse generation suggests avoidance of spacing taught in prior patent, since reference did not accurately test prior patent according to its teachings, particularly those regarding spacing, and therefore artisan of ordinary skill would have afforded reference little weight.

Appeal from the U.S. Patent and Trademark Office, Board of Patent Appeals and Interferences.

Patent application of D. Raymond Young and John C. Wride (method and apparatus for generating an acoustic pulse in a body of water). From decision of Board of Patent Appeals and Interferences upholding final rejection of all claims, applicants appeal. Affirmed.

Richard F. Phillips, Jr., Houston, Texas, for appellants.

Lee E. Barrett, associate solicitor (Fred E. McKelvey, solicitor, with him on brief), Arlington, Va., for appellee Patent and Trademark Office.

Before Newman, Lourie, and Rader, circuit judges.

Rader, J.

Raymond Young and his co-inventor John Wride (collectively Young) appeal from the October 31, 1989 and April 18, 1990 decisions of the Board of Patent Appeals and Interferences (Board). These decisions affirmed the final rejection of all claims in their application. The Board held Young's claimed invention obvious under 35 U.S.C. §103. This court affirms.

BACKGROUND

Young's application discloses a method and apparatus for generating an acoustic pulse in water. Acoustic pulse technology facilitates offshore seismic exploration. The acoustic pulse generates a large gas bubble in the ocean above geological formations on the ocean floor. The rapid expansion and collapse of the gas bubble create a shock wave in the water. The shock wave propagates through the water into the formations below the ocean bed. As the shock wave passes downward through these formations, each interface between adjoining earth strata reflects a portion of the shock wave. These reflections move upward through the ocean. Hydrophones at the ocean's surface can monitor these reflections. From these monitored reflections, geologists can generate a "seismic section" map which shows the configuration of strata in the ocean bed.

Today's most common sources of seismic shock waves are air guns. These air guns feature a chamber for storing and releasing on command highly compressed air. A high-pressure hose charges the gun with

compressed air for rapid firing during a seismic survey.

Acoustic pulse technology suffers from problems with bubble oscillation. Upon release of the compressed air, the bubble undergoes a rapid initial expansion and collapse. Several more expansions and collapses follow the initial collapse, but with diminishing amplitude. Each of these expansion-collapse events creates an additional shock wave. The geological strata reflect each of these additional shock waves. The multiple reflections, in turn, blur the resolution of the seismic section. Most blurring comes from the first oscillation after the initial bubble collapse.

Acoustic pulse technology uses a "primary-to-bubble ratio" to measure susceptibility to oscillation. This ratio compares the shock wave intensity of the initial expansion-collapse to the intensity of the first oscillation. A high ratio means the secondary shock waves are less likely to blur the seismic section.

Young tries to raise the primary-to-bubble ratio above prior art air gun sources by reducing the amplitude of the first oscillation. Young seeks this result by spacing at least three air guns in a characteristic array. The array separates the guns from each other by a critical distance. The distance, D , is at least 1.2 times greater than R , but less than or equal to twice R . R is the maximum radius of the initial air bubble from each gun.* With this spacing, the bubbles from each gun intersect before any single bubble reaches its maximum radius. This intersection dampens the overall oscillation. Young's independent claims each include a spacing limitation within this range.

Independent claim 1 is illustrative:

A method of producing a seismic pulse in a body of water, including the steps of:

(a) disposing in the water a set of at least three air guns, each adapted to produce in the water a gas bubble having maximum radius substantially equal to the quantity R , where the guns are disposed at depths such that each produces, when fired, a bubble of maximum radius R , and the guns are disposed such that each gun is separated from each of the nearest guns thereto in the set by a critical distance, D , where D is substantially equal to $\sqrt{2}R$; and

(b) firing the air guns substantially simultaneously to produce a seismic pulse in the water.

* Mathematically, D is defined by $1.2 R \leq D \leq 2.0 R$.

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Young's dependent claims define the number of the guns or their placement relative to each other or to the ocean surface.

The examiner rejected each of the claims as obvious under 35 U.S.C. §103 in light of five prior art references. The examiner relied primarily on U.S. Patent No. 2,619,186 to Carlisle (the "Carlisle patent" or "Carlisle") to reject Young's claims. Carlisle is the only reference cited by the examiner or Board which suggests the air gun spacing in Young's claims.

Young contested the Board's and the examiner's consideration of Carlisle. Young argued that Carlisle concerns reducing bubble oscillation for chemical explosives, not air guns. Young also argued that an article by Knudsen published six years after Carlisle in the journal *Geophysics* expressly discredits the teachings of Carlisle. W. Knudsen, *Elimination of Secondary Pressure Pulses in Offshore Exploration (A Model Study)*, 23 *Geophysics* No. 3 at 440 (July 1958) (Knudsen). Therefore, Young contended, a person of ordinary skill in the seismic exploration art would not have considered Carlisle when developing an improved seismic array.

The Board rejected Young's arguments. The Board held that the examiner appropriately applied Carlisle notwithstanding the teachings of Knudsen. On appeal, Young asserts as error only the propriety of applying Carlisle as a reference in light of Knudsen's allegedly contrary teachings.

DISCUSSION

This court must decide whether the Board properly affirmed the examiner's rejection over Carlisle. Young has not challenged the other references cited in the examiner's rejection. Further, Young has not argued the merits of any particular claim apart from the others. Therefore, all claims stand or fall together with representative independent claim 1. See *In re Kaslow*, 707 F.2d 1366, 1376, 217 USPQ 1089, 1096 (Fed. Cir. 1983).

The Carlisle patent — "Seismic Exploration Method" — issued on November 25, 1952. Carlisle concerns minimizing bubble oscillation for chemical explosives used in marine seismic exploration. Carlisle controls bubble oscillation by spacing seismic sources to achieve a reduction of the secondary pressure pulse. Carlisle specifically teaches spacing the seismic sources close enough to allow the bubbles to intersect before reaching their maximum radius. Carlisle spaces the bubble centers closer than two maximum bubble radii, or less than "2.0 R" in Young's nota-

tion. Carlisle, col. 3, lines 57-60. Carlisle explains:

[T]he secondary energy normally available from these sources is dissipated by their mutual intersection and tends to eliminate the secondary seismic impulses created when the walls of the bubbles collapse.

Id. at lines 60-64. Thus, Carlisle expressly teaches the spacing limitation in each of Young's claims.

Notwithstanding Carlisle's teachings, Young argues that the Knudsen article discredits Carlisle. Knudsen describes a series of tests which evaluated four proposed techniques for suppressing bubble oscillation. Carlisle was one of the four. Knudsen's article opined that Carlisle yields no appreciable improvement in bubble oscillation suppression. The effective teaching of the Knudsen-/Carlisle combination, Young argues, suggests avoidance of the spacing suggested in Carlisle. Therefore, Young would have this court conclude that his use of Carlisle's spacing would not have been obvious.

Young misunderstands the effect that Knudsen has on Carlisle. The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981). Even if tending to discredit Carlisle, Knudsen cannot remove Carlisle from the prior art. Patents are part of the literature of the art and are relevant for all they contain. *In re Lemelson*, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968). For example, in *In re Etter*, 756 F.2d 852, 859, 225 USPQ 1, 6 (Fed. Cir.), *cert. denied*, 474 U.S. 828 (1985), a reference which disclosed obsolete technology remained in the prior art. This court considered the reference for what it disclosed in relation to the claimed invention.

[1] When prior art contains apparently conflicting references, the Board must weigh each reference for its power to suggest solutions to an artisan of ordinary skill. The Board must consider all disclosures of the prior art, *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976), to the extent that the references are, as here, in analogous fields of endeavor and thus would have been considered by a person of ordinary skill in the field of the invention. The Board, in weighing the suggestive power of each reference, must consider the degree to which one reference might accurately discredit another.

[2] As prior art, the Board correctly weighed Carlisle to determine the patentability of Young's claims. Carlisle expressly teaches both the method and the advantages

of Young's claimed spacing. In fact, Carlisle expressly teaches the exact spacing set out as a limitation in Young's claims. Thus, the Board correctly attributed significant weight to Carlisle in its obviousness determination.

In determining what weight to accord to Carlisle as prior art, the Board also appropriately considered Knudsen's discrediting effect. The Board determined that Knudsen did not convincingly discredit Carlisle. Therefore, the Board appropriately concluded that Knudsen would not have led one skilled in the art to reject Carlisle.

Knudsen did not test Carlisle according to its teachings. For instance, Knudsen did not use an explosive charge in modeling Carlisle. Rather, Knudsen tried to simulate Carlisle with a capacitive electrical discharge in a barrel of oil.

Knudsen did not replicate Carlisle's teachings on spacing. Knudsen tried to model Carlisle by separating the seismic sources by one, two and three bubble radii. Knudsen at 42. At the maximum spacing of three bubble radii, the bubbles will not intersect at all. Carlisle specifically requires spacing to permit bubble intersection. Carlisle, col. 4, lines 47-52. At a spacing of one bubble radius, the two bubbles coalesced into one before the initial collapse. Knudsen at 45. If just one bubble is present, the bubble will oscillate as if no second seismic source was present. Carlisle specifically requires spacing to prevent the formation of one bubble. Carlisle, col. 4, lines 34-37. Finally, at the two bubble radii spacing in Knudsen, the bubbles will just barely intersect. Carlisle requires that the bubbles intersect before each bubble achieves its maximum radius. Carlisle, col. 3, lines 58-60. In sum, Knudsen did not duplicate or appropriately model Carlisle's spacing.

Knudsen's conclusion that Carlisle would "not be effective in eliminating the secondary pressure pulse" also directly contradicts data contained in Knudsen. The Knudsen data point for the two-radii horizontal bubble spacing, although not a completely accurate model of Carlisle, shows a 30% reduction of the secondary pressure pulse. Knudsen at 45, Table 4. This data point represents the only point where Knudsen approximates the spacing shown in Carlisle. At that point, Knudsen confirmed Carlisle's teachings.

The Board found that Knudsen "did not test the Carlisle technique under conditions which are directly comparable to the Carlisle disclosure." Weighing the discrepancies between the Knudsen model and Carlisle's teachings, as well as Knudsen's tendency to confirm Carlisle where the model approxi-

mated Carlisle, the Board concluded: "we do not agree that Knudsen discredits Carlisle."

Because Knudsen did not accurately test Carlisle, an artisan of ordinary skill would not have dismissed Carlisle in light of Knudsen as a whole. It is far more likely that the skilled artisan would have afforded little weight to Knudsen itself. The Board did not err in relying on Carlisle and discounting Knudsen.

CONCLUSION

Knudsen is not so credible or persuasive of a contrary teaching that it would have deterred the skilled artisan from using the teachings of Carlisle. The examiner's use of Carlisle in his rejection of Young's claims is not clearly erroneous. The Board's decision affirming the examiner's rejection is therefore

AFFIRMED.

Maine Supreme Judicial Court

Nobel v. Bangor Hydro-Electric Co.

No. Cum-90-271

Decided December 17, 1990

COPYRIGHTS

1. Elements of copyright — Federal pre-emption — Statutory pre-emption (§205.0803)

Plaintiff's claim for unjust enrichment and conversion under Maine law, arising from defendants' alleged unauthorized use of phrase "energy light," is pre-empted by Copyright Act, 17 USC 301(a), since unjust enrichment claim imposes liability by operation of state law, rather than by additional element of promise to pay, and thus gives right equivalent to rights under Copyright Act, and since conversion claim which does not allege any deprivation of tangible property is equivalent to unauthorized publication claim and is therefore pre-empted.

Appeal from the Maine Superior Court, Cumberland County, Alexander, J.

Action by Michael Nobel against Bangor Hydro-Electric Co., Maine Media Inc., and Brenda Garrard, for breach of contract, unjust enrichment, and conversion. From dismissal of all claims, plaintiff appeals. Vacated in part, affirmed in part, and remanded.

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ES and DOUGIES sound much actually rhyme, especially if (as y probable to us and to the TTAB) pronounced as if derived from the g." ⁴ This similarity in sound is important in this instance because nce shows that its radio and televi- sion has strongly stressed the ification of HUGGIES.

d thought the commercial impres- wo marks differed significantly — esting a diaper which hugged a , while HDE's would be perceived from the name Doug. But this fference, not a striking one at most, appear in the face of the evidence it K-C often advertises its diapers n with one of a number of given ames. "Doug" could be just such a y suggesting that the two prod- rom the same source (or sponsor- somehow connected.

, too, that — though the TTAB ed "the very substantial nature of id advertising of [K-C's] HUG- sable diapers (over \$300 million in er \$15 million in advertising in the lone)" ⁵ — its decision took inad- unt of that Dupont factor. In view r record evidence on that point, we Giant Foods, Inc., supra, "that ark[s] have acquired considerable e weighs in its favor in determining f confusion." 710 F.2d at 1570, at 394.⁶

factor favoring K-C is that, in the osable diapers, only appellant has to appellee's use of DOUGIES) a syllable mark ending in "IES." o other goods of that type with that ept for DOUGIES.

ne factor plainly favoring HDE is is no proof of actual confusion.

s that DOUGIES was in fact drawn ily name of the chief figure in appellee verend Herman Douglas.

er point, the Board recognized that ilt up extensive goodwill in the product ark and that purchasers have come to mark as signifying" K-C's products. IES mark has been used since June JGGIES diapers now rank among the nds of disposable diapers.

quibbles that in the TTAB proceed- not explicitly say that its mark had ne," but there is no doubt that appel- d much evidence on, and strongly extensive reputation," "well-known," etc., characteristic of its mark HUG- conceded those facts.

Appellee insists that we should also count for it the fact that its trade dress is different from that of HUGGIES. It is settled, however, that a distinction in trade dress cannot weigh against likelihood of confusion with respect to the registration of a simple word mark like DOUGIES. The reason is that such dress might well be changed at any time; only the word mark itself is to be registered. *Vorando, Inc. v. Breuer Electric Mfg. Co.*, 390 F.2d 724, 727, 156 USPQ 340, 342 (CCPA 1968). Accordingly, HDE's strong reliance on *Quaker Oats Co. v. General Mills*, 134 F.2d 429, 56 USPQ 400 (7th Cir. 1943), is misplaced. That pre-Lanham Act decision did not at all involve registration of the mark "Oaties" (registration had in fact been denied) but solely differences in packaging and trade dress as against "Wheaties."

III.

[1] The upshot of our own appraisal of the pertinent factors is that there is indeed a likelihood of confusion with K-C's mark HUGGIES. We are not loath to reach this conclusion because of the teaching of our predecessor court — recently reiterated by this court — that there is "no excuse for ever approaching the well-known trademark of a competitor" and "that all doubt as to whether confusion, mistake, or deception is likely is to be resolved against the newcomer, especially where the established mark is one which is famous and applied to an inexpensive product bought by all kinds of people without much care." *Planter's Nut & Chocolate Co. v. Crown Nut Co.*, 305 F.2d 916, 924-25, 134 USPQ 504, 511 (CCPA 1962). To the same effect, see *Specialty Brands, supra*, 748 F.2d at 676, 223 USPQ at 1284. We therefore reverse the decision of the TTAB dismissing K-C's opposition.

REVERSED.

⁷ Belatedly, appellee argues that "HUGGIES" is descriptive but this separate defense was not raised in its pleadings or briefs below. Only the unlikely- hood of confusion was raised against HUGGIES.

⁸ Reverend Douglas, principal in HDE, testi- fied that he was aware of the HUGGIES mark before he adopted DOUGIES.

Court of Appeals, Federal Circuit

Interconnect Planning Corporation v. Feil, et al.

Nos. 84-1467 and 85-565

Decided October 9, 1985.

PATENTS

1. Estoppel — As to validity. — In general (\$35.151)

Federal district court decision on patent validity, which was not final, not certified, not appealed, and mooted by subsequent events, does not collaterally estop appeal of those aspects of subsequent decision on reissue of patent which are "common to" earlier decision, since current appeal involves validity of claims of reissue patent, which was issue that did not exist at time of decision on validity of original patent claims.

2. Patentability — Anticipation — In general (\$51.201)

Reissue — In general (\$58.1)

Patent's reissuance with claims that are not substantially identical to original claim requires evaluation of invention as whole, as currently claimed, in terms of 35 USC 103, and original claims, whether valid or invalid, are not prior art against reissued claims.

3. Patentability — Aggregation or combination — In general (\$51.151)

Federal district court erred by treating each prior art reference as teaching one or more of specific components for use in claimed system, even though such system did not then exist.

Particular patents — Telephone Switches

Re. 31,144, Feil, Multi-Station Telephone Switching System, holding of invalidity vacated.

Appeal from District Court for the South- ern District of New York, Duffy, J.; 223 USPQ 961.

Action by Interconnect Planning Corpora- tion, against Thomas E. Feil, Robert O. Car- penter, V Brand, Inc., and Turret Equipment Corp.,* for patent infringement and unfair competition, in which defendants counterclaim

* The complaint against Robert O. Carpenter and Turret Equipment Corp. was dismissed by stipulation, and they are not parties to this appeal.

for declaration of patent invalidity. From decision granting defendants' motion for summary judgment, plaintiff appeals. Vacated and remanded.

Alfred P. Ewert, and Morgan, Finnegan, Pine, Foley & Lee, both of New York, N.Y. (Jerome G. Lee, Robert A. Molan, and Richard J. McGrath, on the brief, and Howard Karasik, and Sherman & Citron, P.C., both of New York, N.Y., of counsel) for appellant.

Lawrence G. Kurland, and Hubbell, Cohen, Steifel & Gross, P.C., both of New York, N.Y. (Lance J. Lieberman, Daniel L. Dolgin, Towne, Dolgin, Sawyer & Horton, Peter P. Stern, Theodore S. Steingut, and Berger, Steingut, Weiner, Fox & Stern, all of New York, N.Y., on the brief) for appellees.

Before Davis, Smith, and Newman, Circuit Judges.

Newman, Circuit Judge.

Interconnect Planning Corporation (IPC) appeals from the summary judgment of the United States District Court for the Southern District of New York, *Interconnect Planning Corp. v. Feil*, 587 F.Supp. 1495, 223 USPQ 961 (S.D.N.Y. 1984), holding invalid all the claims of IPC's Reissue Patent No. 31,144 entitled "Multi Station Telephone Switching System," invention of Thomas E. Feil, for failure to meet the conditions for patent validity under 35 U.S.C. § 103, and dismissing IPC's count for patent infringement. We hold that invalidity under § 103 has not been proven, as a matter of law. We vacate the summary judgment of invalidity and dismissal of the infringement count, and remand to the district court.

Background

The claims of Reissue Patent No. 31,144 are for certain telephone systems known as "trader turrets", which are multi-line telephone consoles used by the financial community in trading networks for securities, commodities, currency, and the like. The purpose of these systems is to facilitate concurrent telephone connections for traders requiring multiple sources of price information, conducting multiple transactions, and generally meeting the communication demands of busy, often hectic, financial trading enterprises. Trading rooms may house a hundred or more trader turrets.

Because of the large number of lines and connections required and the specific needs of these communication networks, these systems are complex. A high degree of reliability is required in their operation, because even momentary failures can be extremely costly.

The record shows that the Feil trader turrets rapidly achieved commercial success, displacing other systems then in use. IPC attributes the success of the Feil invention to its novel system "architecture", which enabled ease of operation, high capacity, and improved reliability over the systems then available. IPC's sales of the Feil trader turrets, according to the record, grew from \$320,000 for 20 units in 1974, its first year, to \$27,900,000 for 3500 units in 1983.

Thomas Feil, the inventor, was formerly an officer and part owner of IPC. In 1977 Mr. Feil formed the defendant company V Band Systems, Inc., and in 1980 Mr. Feil left IPC and joined V Band, of which he is president and chief executive officer. Defendants make and sell the trader turrets that are here accused of patent infringement.

On November 21, 1980, IPC filed suit in the Southern District of New York asserting infringement of U.S. Patent No. 3,991,282 (the '282 patent), invention of Thomas Feil. Defendants Feil and V Band raised the defense this patent was invalid in terms of 35 U.S.C. § 103. IPC's count for unfair competition was dismissed by the court and is not before us. Various counterclaims were separated and are apparently still pending.

In May of 1981 IPC filed in the U.S. Patent and Trademark Office (the PTO) an application to reissue the '282 patent. IPC cited to the examiner articles by M.E. Ozenberger and W.H. Keith, both of the Bell Telephone Laboratories, on which articles defendants were relying before the district court, and which had not previously been before the examiner. The district court refused to stay the action before it pending completion of the reissue examination, and therefore the reissue examination was suspended by the PTO in accordance with its rules. On defendants' motion for summary judgment, the district court on June 1, 1982 held all claims of the '282 patent invalid for obviousness under 35 U.S.C. § 103. *Interconnect Planning Corp. v. Feil*, 543 F.Supp. 610, 614-19, 215 USPQ 734, 736-41 (S.D.N.Y. 1982).

Following this decision, at IPC's request the PTO resumed examination of the reissue application. The court's decision was provided to and considered by the examiner. A supple-

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Feil, the inventor, was formerly an part owner of IPC. In 1977 Mr. the defendant company V Band ., and in 1980 Mr. Feil left IPC V Band, of which he is president ecutive officer. Defendants make rader turrets that are here accused rgement.

ber 21, 1980, IPC filed suit in the istrict of New York asserting in- f U.S. Patent No. 3,991,282 (the , invention of Thomas Feil. De- l and V Band raised the defense as invalid in terms of 35 U.S.C. count for unfair competition was the court and is not before us. rterclaims were separated and are ill pending.

1981 IPC filed in the U.S. Patent ark Office (the PTO) an applica- e the '282 patent. IPC cited to the ticles by M.E. Ozenberger and both of the Bell Telephone Labo- which articles defendants were e the district court, and which had y been before the examiner. The refused to stay the action before t- pletion of the reissue examina- efore the reissue examination d by the PTO in accordance with defendants' motion for summary e district court on June 1, 1982 s of the '282 patent invalid for nder 35 U.S.C. § 103. *Intercon- r Corp. v. Feil*, 543 F.Supp. 610, USPQ 734, 736-41 (S.D.N.Y.

his decision, at IPC's request the d examination of the reissue ap- : court's decision was provided to d by the examiner. A supple-

mental reissue declaration by IPC referred to this decision as a basis for the reissue application. The '282 patent was surrendered, and on February 8, 1983 the PTO granted the reissue patent, RE 31,144, IPC having restricted its claims in various ways and having overcome the newly cited prior art.

Defendants moved for summary judgment of invalidity of the reissue patent, asserting collateral estoppel based on the court's decision on the '282 patent, and also asserting invalidity under 35 U.S.C. § 103. IPC resisted the motion, and the parties' memoranda, affidavits, depositions, and other documents are of record. For reasons similar to those of the 1982 decision, the motion for summary judgment was granted on June 20, 1984.

That decision, holding all of the reissue claims invalid, was certified and made final under Fed. R. Civ. P. 54(b), with instructions by the court that IPC "attempt to have any appeal . . . heard at the same time and before the same panel" as any appeal from a decision on the same patent by the United States District Court for the District of New Jersey.¹ We agreed. Both appeals are decided this day.

Although both appeals involved similar issues and argument, specific to the New York suit are certain procedural issues, as discussed *infra*.

Collateral Estoppel

Defendants argue that IPC's appeal rights are curtailed on the basis of collateral estoppel. Two separate but related issues of estoppel are raised, both arising out of the district court's 1982 decision on the '282 patent.

A.

Defendants assert first that IPC can not now appeal from or argue those aspects of the 1984 decision on the reissue patent which are "common to" the 1982 decision on the '282 patent, on the ground that those aspects could have been appealed earlier, and that it is too late to do so now. IPC asserts in response that (1) the issues are not the same, (2) a different patent is involved, and (3) the 1982 decision was not final.

Considering the finality issue, for collateral estoppel to arise the prior decision need not have been final in the sense of 28 U.S.C. § 1291 but, in the words of the Restatement, the prior

adjudication must have been "sufficiently firm to be accorded conclusive effect". Restatement (Second) of Judgments § 13 (1982). Sufficient firmness, according to the Restatement, requires that the party against whom the estoppel is asserted have had the right, even if not exercised, to challenge on appeal the correctness of the earlier decision. Restatement (Second) of Judgment, § 13 reporter's note comment f (1982). Defendants argue that IPC had three such opportunities: appeal under 28 U.S.C. § 1292(a)(1), which governs appeals from interlocutory orders involving injunctions; appeal under 28 U.S.C. § 1292(c)(2), which governs appeals in patent infringement cases final except for an accounting; and appeal under Fed. R. Civ. P. 54(b), which governs judgment on fewer than all of multiple claims in an action.

None of these situations controls the case before us. 28 U.S.C. § 1292(a)(1) relates to orders involving injunctions, and although defendants argue that IPC's complaint necessarily invokes this section, this does not impart automatic appealability to interlocutory orders that do not involve injunctions. As for 28 U.S.C. § 1292(c)(2), the district court's judgment was not final except for an accounting, in light of the pendency of counterclaims. *9 J. Moore, B. Ward, & J. Lucas, Moore's Federal Practice*, ¶ 110.19[4], at 220 (1985). Fed. R. Civ. Proc. 54(b) requires that the court have expressly directed entry of a final judgment, and that "[i]n the absence of such determination and direction, any [decision] which adjudicates fewer than all the claims . . . shall not terminate the action as to any of the claims". See also 6 Moore's Federal Practice ¶ 54.42, at 813.

Neither IPC nor the defendants asked the district court to enter a final judgment on its decision holding the '282 patent invalid, and the court did not do so. Defendants assert, however, that IPC should now be estopped because it did not move for finality of the ruling nor request that the judgment be certified for interlocutory appeal. An application for certification is by no means certain to be granted and, in this case, IPC's eventual request for certification of the original decision was opposed by defendants and was refused by the court.

The law of collateral estoppel is not intended to penalize a party for declining to try to take a piecemeal appeal. Further, the '282 patent had been placed in reissue, and an appeal on the merits of patent claims for which reissue was being sought would have been a meaningless exercise, as may have been recognized at the time.

[1] We conclude that the district court's 1982 decision on the '282 patent claims, a

¹ *IPC Communications, Ltd. v. Standard Tele-services Supply, Inc.*, No. 81-1832D (D.N.J. 1984) (unreported), vacated and remanded, No. 84-1599 (Fed. Cir. _____, 1985) (unreported).

decision not final, not certified, not appealed, and mooted by subsequent events, lacks collateral estoppel effect for the purpose urged by defendants. The issue here on appeal is the validity of the claims of the reissue patent, an issue that did not exist at the time of the decision on validity of the '282 patent claims. There is no estoppel against appellate review of all aspects pertinent to the decision on the reissue claims. 1B Moore's Federal Practice ¶ 0.441 [3.-3], at 737.

B.

IPC asserts that the district court incorrectly invoked collateral estoppel when it analyzed the reissue claims by comparing them with the original claims of the '282 patent, then applying prior art only to the differences between the reissue claims and the original claims. Our predecessor court, the U.S. Court of Claims,² has confronted related situations, wherein estoppel was raised as to unadjudicated claims of a patent whose other claims had been adjudicated in an earlier action. The Court of Claims adopted a pragmatic approach, stating that the first step was to determine whether any new issues were raised as to the nonlitigated claims. In *Westwood Chemical, Inc. v. United States*, 525 F.2d 1367, 1375, 187 USPQ 656 (Ct. Cl. 1975), adopting 186 USPQ 383, 389 (Ct. Cl. Tr. Div. 1975), the court said:

Where obviousness is the basis for the prior invalidity holding, an inquiry into the identity of the validity issue is more properly phrased in terms of the factual inquiries mandated by *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 466-467, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966), as a prerequisite to such a validity determination.

Applying the *Graham* guidelines, the court said:

Thus, the inquiry should be whether the nonlitigated claims present new issues as to the art pertinent to the nonlitigated claims; as to the scope and content of that art; as to the differences between the prior art and the nonlitigated claims; and as to the level of ordinary skill in that art. If none of these inquiries raises any new triable issues, then the obviousness determination in the prior proceeding should be equally applicable to the nonlitigated claims.

² In *South Corp. v. United States*, 690 F.2d 1368, 215 USPQ 657 (Fed. Cir. 1982), the Federal Circuit adopted as precedent the decisions of the Court of Claims and the Court of Customs and Patent Appeals.

Id. See also *Bourns, Inc. v. United States*, 537 F.2d 486, 199 USPQ 256 (Ct. Cl. 1976), adopting 187 USPQ 174 (Ct. Cl. Tr. Div. 1975); *Carter-Wallace, Inc. v. United States*, 496 F.2d 535, 538, 182 USPQ 172, 175 (Ct. Cl. 1974) (in determining the applicability of the estoppel, the first consideration is "whether the issue of invalidity common to each action is substantially identical."):

The question of substantial identity of reissue claims arose in *Plastic Container Corp. v. Continental Plastics of Oklahoma, Inc.*, 607 F.2d 885, 203 USPQ 27 (10th Cir. 1979), cert. denied, 444 U.S. 1018, 204 USPQ 696 (1980), wherein the court determined that the reissue claims were not substantially identical to the original claims, and therefore that collateral estoppel did not apply.

In *Bourns*, responding to plaintiff's argument that according collateral estoppel effect to non-identical adjudicated claims would amount to treating the claims previously held to be invalid as prior art, the court agreed that this would be inappropriate:

A domino approach in which each successively narrower claim is compared with the one before it, not with the prior art, is inappropriate since it improperly gives prior-art effect to the subject matter of an invalid claim. In *re Craig and Street*, Cust. & Pat. App., 411 F.2d 1333, 1335, 162 USPQ 157, 158-159 (1969).

537 F.2d at 493, 187 USPQ at 179.

The district court compared the reissue claims with the '282 claims, and erroneously concluded that reissue claims 1 through 6 were substantially identical to the original claims, and that reissue claims 7 through 9, although not substantially identical, involved some substantially identical "issues".

This erroneous legal conclusion may have compounded the error in the next step, wherein the court compared the differences between the original and the reissue claims with prior art that was pertinent only to those differences, thus effectively giving the original claims prior art effect — the pitfall against which *Bourns* cautioned:

A claim may be invalid for obviousness under 35 U.S.C. § 103 but still describe a combination not found in the prior art. Moreover, it is well settled that each claim of a patent is entitled to a presumption of validity and is to be treated as a complete and independent invention. 35 U.S.C. § § 282, 288. *Leeds & Catlin v. Victor Talking Machine Co.*, 213 U.S. 301, 319, 29 S.Ct. 495, 53 L.Ed. 805 (1909); *Smith Industries International v. Hughes Tool Co.*, 396 F.2d 735, 736 (5th Cir. 1968).

urns, Inc. v. United States, 537 USPQ 256 (Ct. Cl. 1976); *USPQ 174* (Ct. Cl. Tr. Div. *Wallace, Inc. v. United States*, 538, 182 USPQ 172, 175 (Ct. determining the applicability of the first consideration is "whether invalidity common to each action identical.")).

n of substantial identity of reissue in *Plastic Container Corp. v.astics of Oklahoma, Inc.*, 607 USPQ 27 (10th Cir. 1979), cert. 510, 1018, 204 USPQ 696 (1980), court determined that the reissue is substantially identical to the original, and therefore that collateral estoppel apply.

responding to plaintiff's arguing collateral estoppel effect to adjudicated claims would apply the claims previously held prior art, the court agreed that appropriate:

approach in which each successive claim is compared with the prior art, not with the prior art, is since it improperly gives priority to the subject matter of an *In re Craig and Street*, Cust. 411 F.2d 1333, 1335, 162 USPQ 58-159 (1969).

, 187 USPQ at 179. The court compared the reissue '282 claims, and erroneously issue claims 1 through 6 were identical to the original claims, claims 7 through 9, although identical, involved some substantial "issues".

is legal conclusion may have error in the next step, where the differences between the reissue claims with prior art only to those differences, giving the original claims prior art pitfall against which *Bourns*

be invalid for obviousness C. § 103 but still describe a not found in the prior art. well settled that each claim entitled to a presumption of novelty to be treated as a complete invention. 35 U.S.C. § 103 & *Catlin v. Victor Talking Machines Co.*, 213 U.S. 301, 319, 29 S.Ct. 305 (1909); *Smith Industries v. Hughes Tool Co.*, 396 F.2d 1017, 1018, 154 USPQ 217 (Ct. Cir. 1968).

[2] *Id.* When a patent has been reissued with claims that are not substantially identical to the original claims, the invention as a whole, as now claimed, must be evaluated in terms of 35 U.S.C. § 103. The original claims, whether valid or invalid, are not prior art against the reissued claims.

The Summary Judgment

The proceeding from which this appeal is taken was styled "summary", in that the court's decision was made on defendants' motion for summary judgment. The earlier decision on the '282 patent was also made on defendants' motion for summary judgment. IPC contends that the matter was inappropriate to summary judgment, in view of the presence of disputed issues of material fact.

Defendants Feil and V Band argued before the district court, and repeat before us, that no material fact is in dispute, that the questions before the district court and before us in this appeal are purely legal ones, and that the issue was properly dealt with summarily. In its discussion of reissue claims 7 through 9, which claims had no counterpart in the original patent, the district court referred to "claims and issues that have not yet been subjected to a full and fair adjudication", 587 F.Supp. at 1500, 223 USPQ at 965; the court viewed both proceedings as "full" as well as fair, a process not always accommodated by summary proceedings on a documentary record.

Obviousness *vel non* under 35 U.S.C. § 103 is a question of law, whose conclusion requires preliminary determination of several underlying factual issues, as set out in *Graham v. John Deere Co.*, 338 U.S. 1, 148 USPQ 459 (1966). See also *Gardner v. TEC Systems, Inc.* 725 F.2d 1338, 1344-45, 220 USPQ 777, 782-83 (Fed. Cir.) (in banc), cert. denied, 105 S.Ct. 116, 225 USPQ 232 (1984). These factual issues relate to the scope and content of the prior art, the differences between the prior art and the claimed invention as a whole, the level of ordinary skill in the art at the time the invention was made, and the so-called "secondary considerations" that reflect the contemporaneous response to the invention.

In reviewing IPC's assertions that there were genuine issues of material fact relating to the *Graham* inquiries, we have reviewed the submissions of the parties. Before the court, according to the record, were all the references cited as prior art; as well as the depositions of Examiner Randall P. Myers of the United States Patent and Trademark Office, engineer

John Fitzmaurice of New York Telephone, and inventor/defendant Thomas E. Feil; and various documentary exhibits. Also of record were the affidavits of Alan R. Fitzpatrick, president of American Telecommunications Concepts; IPC's technical experts: Dennis Maywald and Herbert Goldwag; Thomas P. Bradbury, vice president and treasurer of IPC; and extensive written submissions and arguments.

Although fact and opinion are intertwined in many of these documents, the factual considerations required by the *Graham* analysis appear to have been adequately presented in the record. The technological structure and operation of the devices of the prior art were not in material dispute,³ although there was strong dispute about the relationship of the teachings of the references to the problems solved by the Feil system, and the weight to be given to evidence of the Feil invention's commercial success.

The district court stated that expert testimony was unnecessary, *Interconnect Planning Corp. v. Feil*, 587 F.Supp. at 1497, 223 USPQ at 963, and held all of the reissue claims invalid. As will be discussed, we think that the district court reached this conclusion by incorrectly applying the law of 35 U.S.C. § 103.

35 U.S.C. § 103

Those charged with determining compliance with 35 U.S.C. § 103 are required to place themselves in the minds of those of ordinary skill in the relevant art at the time the invention was made; to determine whether that which is now plainly at hand would have been obvious at such earlier time.

The invention must be viewed not with the blueprint drawn by the inventor, but in the state of the art that existed at the time.

The invention must be evaluated not through the eyes of the inventor, who may have been of exceptional skill, but as by one of "ordinary skill." See *Stewart-Warner Corp. v. City of Pontiac, Michigan*, 767 F.2d 1563,

³ IPC argues that the district court should not have resolved any question of substantial identity between the claims of the original and reissue patents in defendants' favor because that is a contested fact question which should not have been resolved against the nonmovant, citing *Tee-Pak, Inc. v. St. Regis Paper Co.*, 491 F.2d 1193, 1200, 181 USPQ 75, 80 (6th Cir. 1974). Under this court's precedent substantial identity between claims, a matter of claim interpretation, is a question of law. See, e.g., *Raytheon Co. v. Roper Corp.*, 724 F.2d 951, 956, 220 USPQ 592, 596 (Fed. Cir. 1983), cert. denied, 105 S.Ct. 127, 225 USPQ 232 (1984).

1570, 226 USPQ 676, 680-81 (Fed. Cir. 1985).

This is not a facile statutory interpretation. The quality of non-obviousness is not easy to measure, particularly when challenged years after the invention was made. That which may be made clear and thus "obvious" to a court, with the invention fully diagrammed and aided, in this case, by a hostile inventor seeking to eliminate his own invention, may have been a breakthrough of substantial dimension when first unveiled.

The judicial application of uniform standards for determining compliance with 35 U.S.C. § 103 is essential, because the technological incentives fostered by the patent system depend on consistent interpretation of the law. To this end, faithful adherence to the patent statute and guiding precedent fosters uniformity in result.

A.

Following examination by the Patent and Trademark Office, a duly issued patent is presumed valid, as is a duly reissued patent. The burden of proving otherwise resides with the person challenging its validity. 35 U.S.C. §282.

This statutory presumption derives in part from recognition of the technological expertise of the patent examiners. A reissue application receives a fresh examination, normally concentrated on those references and reasons that occasioned its filing. The record shows that this reissue application received a supplemental internal review by three examiners because it was involved in litigation.

Although IPC's view is incorrect that the PTO's decision must be given controlling weight, we do agree that the examination procedure and result should be given appropriate consideration and due weight by the court. As stated in *Fromson v. Advance Offset Plate, Inc.*, 755 F.2d 1549, 1555, 225 USPQ 26, 31 (Fed. Cir. 1985), "[t]he Examiner's decision, on an original or reissue application, is never binding on the court. It is, however, evidence the court must consider in determining whether the party asserting invalidity has met its statutory burden by clear and convincing evidence."

Upon reissue the "burden of proving invalidity was made heavier", as stated in *Fromson, supra*. This burden must be met by the party asserting invalidity. The district court here relied on the identical references that had been before the reissue examiners, and disdaining the need for expert testimony, reached a different conclusion in law. Although we affirm the obligation of the district court to

reach an independent conclusion, the reissue patent reaches the court clothed in a statutory presumption of validity, and clear and convincing evidence is required to surmount this presumption. *American Hoist & Derrick Co. v. Sowa & Sons, Inc.*, 725 F.2d 1350, 1359-60, 220 USPQ 763, 770 (Fed. Cir.), cert. denied, 105 S.Ct. 95, 224 USPQ 520 (1984).

B.

The court referred to the content of the prior art references in broad terms, occasionally using the title of a reference to explain its pertinence. In this crowded art of telephone systems, as IPC correctly pointed out, it is not enough to show that each of the components used by Feil was known, and had been used in other telephone systems. Feil did not claim to have invented any of the components of his claimed system.

[3] From its discussion of the prior art it appears to us that the court, guided by the defendants, treated each reference as teaching one or more of the specific components for use in the Feil system, although the Feil system did not then exist. Thus the court reconstructed the Feil system, using the blueprint of the Feil claims. As is well established, this is legal error. *Kalman v. Kimberly-Clark Corp.*, 713 F.2d 760, 774, 218 USPQ 781, 791 (Fed. Cir. 1983), cert. denied, 104 S.Ct. 1284, 224 USPQ 520 (1984).

Illustrative is the court's analysis of reissue claim 1. Pertinent is not only its analysis of the differences between the reissue claim and the prior art, but also the differences between the reissue claim and the original claim. In claim 1, matter enclosed in brackets appeared in the original claim but forms no part of the reissue claim, and matter printed in italics was added by reissue:

1. For a telephone system in which telephone communication is capable of being established for each telephone station of a plurality of telephone stations over a standard telephone line by directly connecting each telephone station to a selected standard telephone line of a plurality of standard telephone lines, each of said plurality of standard telephone lines capable of being directly connected to each of said plurality of telephone stations, an improvement comprising:
 - a plurality of pairs of contacts, with respective pairs of said contacts being connected with respective ones of said standard telephone lines for allowing said communication;
 - a plurality of relay coils, with respective ones of said relay coils controlling respective pairs of said contacts to be opened or closed;

dependent conclusion; the reissue is the court clothed in a statutory cloak of validity, and clear and concise language is required to surmount this. *American Hoist & Derrick Co. v. Tensar, Inc.*, 725 F.2d 1350, 1359-60, 763, 770 (Fed. Cir.), cert. denied, 5, 224 USPQ 520 (1984).

B.

It referred to the content of the prior art in broad terms, occasionally made a reference to explain its meaning. In this crowded art of telephone IPC correctly pointed out, it is not shown that each of the components was known, and had been used in prior systems. Feil did not claim to have any of the components of his system.

In its discussion of the prior art it was that the court, guided by the prior art, treated each reference as teaching the use of the specific components for use in its system, although the Feil system did not exist. Thus the court reconstructed the system, using the blueprint of the Feil system as well established; this is legal error. *Kimberly-Clark Corp.*, 713 F.2d 218 USPQ 781, 791 (Fed. Cir. 1984), 104 S.Ct. 1284, 224 USPQ 520 (1984).

What is the court's analysis of reissue claim 1? It is not only its analysis of the differences between the reissue claim and the prior art but also the differences between the reissue claim and the original claim. In claim 1, the differences between the reissue claim and the original claim are enclosed in brackets appeared in the original claim but forms no part of the reissue claim. Matter printed in italics was added.

a telephone system in which telecommunication is capable of being established for each telephone station of a plurality of telephone stations over a standard telephone line by directly connecting each telephone station to a selected standard telephone line of a plurality of standard telephone lines, each of said plurality of standard telephone lines capable of being connected to each of said plurality of telephone stations, an improvement comprising:

a plurality of pairs of contacts, with respective means for opening and closing said contacts being connected with respective ones of said standard telephone lines, allowing said communication;

a plurality of relay coils, with respective means for energizing and de-energizing said relay coils controlling respective ones of said contacts to be opened or closed;

a plurality of sets of non-locking pushbutton [switch means] switches with each set of pushbutton [switch means] switches connected to respective ones of said telephone stations with respective ones of said pushbutton [switch means] switches of said sets of pushbutton [switch means] switches corresponding to respective ones of said standard telephone lines and being connected with respective ones of said relay coils and being depressed for energizing a selected one of said relay coils for closing a corresponding pair of contacts to allow said telephone communication; [and]

an electronic holding circuit for each of said relay coils, said holding circuits being operative

to establish a held state after initial energization of the associated relay coil by momentarily depressing the associated pushbutton switch, and

to maintain said corresponding pair of contacts closed while in the held state;

a logic circuit for each station connected to said holding circuits to detect conditions for releasing the held state;

each of said stations comprising [first light display means] a set of status lights; connection means connecting corresponding pushbuttons of said sets of pushbutton [switch means] switches in each of said stations and to said [first light display means] status lights for energizing said [first light display means] status lights in each station to display the status of each of said plurality of standard telephone lines in each of said stations;

said station further comprising [first light display means] an active line indicator separate from said status lights connected to said pushbutton [switch means] switches for identifying the standard telephone line of said plurality of standard telephone lines that the telephone station is using for said telephone communication.

Reissue claim 1 was held invalid on two grounds. The first ground was that it was substantially identical to claim 1 of the '282 patent, and thus invalid on the basis of collateral estoppel. The court in its 1982 decision referred to Carter U.S. Patent No. 3,150,238 and Foulkes U.S. Patent No. 3,757,056 as disclosing "non-locking buttons, relay coils and pairs of contacts" as applied to the original claim 1. In the 1984 decision the court stated that "Claim 1 has not been changed in such a way that alters the above finding of disclosure by prior art." 587 F.Supp. at 1499, 223 USPQ at 964. This treatment of the reissue claim is not supported by the claim content, as will be apparent from the court's further discussion of claim 1.

As the second ground for its holding of invalidity the court analyzed the changes made by reissue. The court identified three areas as new to reissue claim 1, and applied five references to these areas as follows: "See Defendants' Exhs. C13, D4-D6 (non-locking buttons); Defendants' Exhs. C4, C7 (holding circuits); Defendants' Exhs. C16, C13 (separate active lines)." *Id.* at 1499, 223 USPQ at 964 (footnotes omitted).

The first set of cited exhibits refers to articles by Keith, "A New Switching System for 'Right of Way' Companies," *Bell Laboratories Record*, Apr. 1968, and Ozenberger, "Voice Communication System for Air Traffic Control," *Bell Laboratories Record*, May 1961, which the court stated taught the use of non-locking pushbuttons. The second set refers to the Carter patent, which the district court said teaches a "Relay Control Circuit" (the title of the Carter patent), and the Foulkes patent which "recites that [e]ach of these [control] circuits may take any desired and presently known form . . . to perform a recognized control function . . . evaluat[ing] the 'hold' feature." *Id.* at 1499 n.6, 223 USPQ at 946 n.6. The third set of exhibits refers to Simon U.S. Patent No. 3,928,732, which the district court described by its title, "Extension and Line Indicating Display System for Key Telephone System," and Keith, which the district court stated "also discloses separate active lines." *Id.* at 1499 n.7, 223 USPQ at 964 n.7.

The court's analysis of the scope of the new material in reissue claim 1 in itself shows the error in the court's conclusion that as a matter of law reissue claim 1 is substantially identical to its parent claim. The claim limitations of the electronic holding circuits for each relay coil, the logic circuit, and separate active line indicator, in combination with the non-locking pushbutton switches connected to the relay coils, were added by reissue. Observing these differences, their relationship to the invention as a whole, and the prior art, we conclude as a matter of law that reissue claim 1 is not substantially identical to the original claim. The 1982 decision, which was directed to the original claims, does not apply to the reissue claims. Collateral estoppel as a basis for the court's holding of invalidity is not supported in law.

Having determined that a reissue claim is not substantially identical to the parent, the parent claim is of no further moment. As stated in *Wayne-Gossard Corp. v. Moretz Hosiery Mills, Inc.*, 539 F.2d 986, 991, 191 USPQ 543, 546-47 (4th Cir. 1976), "the original claim was at an end, denuded of all potency save as a bench mark of interpretation, at the time of the reissue's infringement."

The original claim is not prior art against the reissue claim. It is not correct to weigh the reissue claim against the original claim. It is not correct to weigh the changes in the reissue claim against the original claim. It is the reissue claim alone that is to be analyzed in accordance with the *Graham* guidelines, and the differences to be considered are the differences between the reissue claim as a whole and the prior art.

In the court's 1982 analysis of the original claims, to which the court referred in its 1984 decision, the court had identified "six principal features which plaintiff argues are not obvious" and explained why the court concluded that these features are obvious by referring to various prior art references showing various of the features in various contexts. *Interconnect Planning Corp. v. Feil*, 543 F.Supp. at 617, 215 USPQ at 739. As we have observed, it is the emphasis on the obviousness of "features," rather than the claimed telephone system as a whole, that constitutes the flaw in the application of section 103 to the Feil claims. As stated in *In re Shuman*, 361 F.2d 1008, 1012, 150 USPQ 54, 57 (CCPA 1966):

It is impermissible to first ascertain factually what appellants *did* and then view the prior art in such a manner as to select from the random facts of that art only those which may be modified and then utilized to reconstruct appellants' invention from such prior art.

The court in 1982 summarized its conclusion with respect to these six "features" by observing (1) that although the pairs of contacts and relay coils "is not disclosed in either the Keith Article or the Ozenberger Article"; the Foulkes and Carter patents do disclose them; (2) that Keith, Ozenberger, and Foulkes refer to pushbutton switches; (3) that Keith shows a set of display lamps although Ozenberger uses a single lamp, and that Paraskevavkos (U.S. Patent No. 3,727,003) and Simon et al. show either a digital display or the incoming line number; (4) that Paraskevavkos shows a decoder and that "the diode matrix was no mystery to one engineer" (Thomas Fitzmaurice, of Bell Labs, who testified that he readily understood the Feil system after he was shown it); (5) that Keith shows which lines are active; and (6) that the asserted unique master station hook up with blocking means is shown in Ozenberger and a Verdon patent (U.S. Patent No. 3,819,871). *Interconnect Planning Corp. v. Feil*, 543 F.Supp. at 617-19, 215 USPQ at 739-40.

In its 1984 decision the court added the additional citations of references pertinent to the changes in the reissue claims, as discussed above. As in its citation of references against the various features of the original claims, the

court selected from each reference a feature or features that also appeared in the reissue claims. No reference, however, suggested the overall arrangement, the "architecture", of the Feil system.

IPC presented affidavit testimony explaining the references in the context of the state of the telephone systems art at the time, none of which testimony was controverted other than by attorney argument. The most advanced multi-line devices at the time the invention was made, according to this record, used the then state-of-the-art crossbar switching equipment, and electrical or mechanical interconnections or interlocks. The two Bell Labs publications of Keith and Ozenberger, on which defendants and the district court placed substantial emphasis, used crossbar switching. Feil did not.

Mr. Feil's affidavit filed with the district court states "The Ozenberger and Keith articles disclose what I thought I invented in 1974". Mr. Feil made no reference to the crossbar switches required by these references, and offered no discussion of either differences or similarities between his system and those of these references.

The Carter patent used relay switches in the telephone switching system it describes. Carter, of Bell Laboratories, taught the use of quick-release control relays in combination with slow-release work relays, to achieve the specific purposes desired by Carter. Carter also required use of a "locking chain" rather than independently operating relays, and a more complex communication path as compared with Feil's direct connections. Feil established multiple direct connections in a system where theretofore it was believed, according to the record, that crossbar switches would be required.

The Feil system eliminated both crossbar switches and mechanical interlocks or mechanically locking pushbuttons, and instead used relays, a well-known type of switch. But Feil avoided the need (of Carter) to establish potentially large numbers of contacts and operates a concomitantly large number of relays in series in order to connect stations within the system. As IPC's uncontroverted testimony shows, Feil avoided interconnections and interlocks, both of which, according to the Maywald affidavit, had previously been considered necessary to lock out faults. The Maywald affidavit stated that Carter's approach would be "impossible and impractical" in the trader turret application because "[t]o try and accurately control the release times of different relays over a long period of time would be virtually impossible considering the wear and deterioration of components" in a "trader turret network involving some 20,000 or more relays". Maywald's explanation of the

from each reference a feature or also appeared in the reissue reference, however, suggested the element, the "architecture", of the

ated affidavit testimony explains in the context of the state of systems art at the time, none of any was controverted other than argument. The most advanced ideas at the time the invention was made to this record, used the then crossbar switching equipment, or mechanical interconnections. The two Bell Labs publications Ozenberger, on which defendants' court placed substantial error-crossbar switching. Feil did not. The affidavit filed with the district court, the Ozenberger and Keith articles, what I thought I invented in Feil made no reference to the changes required by these references, a discussion of either differences between his system and those of

as. The patent used relay switches in the switching system it describes. Laboratories, taught the use of control relays in combination with work relays, to achieve the uses desired by Carter. Carter used a "locking chain" rather than relays operating relays, and a communication path as compared to direct connections. Feil espies direct connections in a system, therefore it was believed, the record, that crossbar switches are used.

system eliminated both crossbar mechanical interlocks or mechanical pushbuttons, and instead used a well-known type of switch. But the need (of Carter) to establish large numbers of contacts and an apparently large number of relays in order to connect stations within the system, Carter's uncontroverted testimony showed interconnections and in which, according to the affidavit, had previously been necessary to lock out faults. The affidavit stated that Carter's approach was "impossible and impractical" for turreted application because "[t]o precisely control the release times of relays over a long period of time is practically impossible considering the variation of components" in a network involving some 20,000 relays. Maywald's explanation of the

technical operation of the references is uncontradicted, although defendants take issue in attorney argument with Maywald's conclusions.

The Foulkes patent, on which the district court also relies, described a "bipolar multiplexing circuit" based on a "contact tree" relay switching arrangement. Foulkes taught a telephone system that Maywald avers, without contradiction, "could not be realistically expanded into large systems like trader turrets". The district court did not explain how the Foulkes or other systems of different circuitry made obvious the different system of Feil's claims.

The Keith and Ozenberger systems, as previously discussed, are different systems from that of Feil. Like the systems of the other references, they contain some elements in common with that of Feil. The Ozenberger system, based on crossbar switches, was designed for air traffic control. The Keith system is described as tailored to the specific needs of "right-of-way" companies, and is a cordless system limited to up to eight consoles of up to a hundred lines. As Keith says, "[a] system of crossbar switches is the heart of the switching system". Neither Keith nor Ozenberger suggests that the crossbars be replaced with relays and that the other changes be made to produce the admittedly different Feil system.

The novelty of the Feil system is not controverted by the defendants. Its value in trader turret systems has received the ultimate recognition, market success and imitation.

35 U.S.C. § 103 requires that obviousness be determined with respect to the invention as a whole. See, e.g., *Jones v. Hardy*, 727 F.2d 1524, 1528, 220 USPQ 1021, 1024 (Fed. Cir. 1984); *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), cert. denied, 105 S.Ct. 172 (1984); *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537, 218 USPQ 871, 877 (Fed. Cir. 1983). This is essential for combination inventions, for generally all combinations are of known elements. *Environmental Designs, Ltd. v. Union Oil Co. of California*, 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed. Cir. 1983), cert. denied, 104 S.Ct. 709, 224 USPQ 520 (1984).

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577 & n.14, 221 USPQ 929, 933 & n.14 (Fed. Cir. 1984). There must be "something in the prior art as a whole" to suggest the desirability, and thus the obviousness, of making the combination". *Lindemann*

Maschinenfabrik GmbH v. American Hoist and Derrick Co., 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984).

Critical to the analysis is an understanding of the particular results achieved by the new combination. The claims here at issue are directed to a combination of known components of telephone systems in an admittedly new way to achieve a new total system. Neither the district court in its opinion, nor the defendants, identified any suggestion in the prior art that the components be combined as they were by Feil or that such combination could achieve the advantages of the Feil system.

Not only must the claimed invention, as a whole be evaluated, but so also must the references as a whole, so that their teachings are applied in the context of their significance to a technician at the time — a technician without our knowledge of the solution. The defendants propounded and the district court appears to have followed an analytical method that well illustrates the "mosaic" analogy discussed in *W.L. Gore & Assocs.*, 721 F.2d at 1552, 220 USPQ at 302, where this court said:

[T]he claims were used as a frame, and individual naked parts of separate prior art references were employed as a mosaic to recreate a facsimile of the claimed invention.

Defendants refer to the decision of the Supreme Court in *Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 189 USPQ 449 (1976). As the Court there held, Sakraida's combination of old elements to wash barn floors with flowing water did not produce a new or different function, and affirmed the district court's holding that "all of the elements of [the combination] are old . . . and the combination of them . . . being neither new nor meeting the test of non-obviousness." *Id.* at 274, 189 USPQ at 450. In the Feil invention the combination was admittedly new, and it produced a new system having theretofore unavailable attributes.

Recognizing the difficulty of casting one's mind back to the state of technology at the time the invention was made, courts have long recognized the usefulness of evidence of the contemporaneous attitude toward the asserted invention. A retrospective view of the invention is best gleaned from those who were there at the time. Mr. Feil, the inventory impugning his own invention, now avers that he did no more than did the prior art, specifically the Keith and Ozenberger articles. Mr. Feil's disavowal of his invention is staunch, although he less modestly commented in 1977, before he left IPC, on the reaction of Bell Labs' engineer at that earlier time:

He [Fitzmaurice] showed too much enthusiasm. I mean, he was really excited by the

thing. Like this is incredible. You guys are geniuses.

You're 50 miles ahead of Bell Labs. (App. Vol. VI, F357).

You know what he said. He said You're 50 miles ahead of Bell Lab? He said "miles", not years, he made it in miles. You're 50 miles ahead of the Bell Labs. (App. Vol. VI, F355).

Mr. Elia of the Republic Bank, one of IPC's customers, attested:

Upon viewing the equipment, the AT&T people indicated that it was unbelievable. They did not think it could be done. They were surprised that it was done. (App. Vol. VI, F360).

Although the district court remarked in its 1982 decision that evidence of commercial success "cannot be afforded any weight" "in light of my finding of obviousness", 543 F.2d at 619, 215 USPQ at 741; such evidence when present must be considered and afforded appropriate weight. *Simmons Fastener Corp. v. Illinois Tool Works, Inc.*, 739 F.2d 1573, 1575, 222 USPQ 744, 746 (Fed. Cir. 1984), cert. denied, 105 S.Ct. 2138 (1985); *Jones v. Hardy*, 727 F.2d at 1530, 220 USPQ at 1026; *Medtronic, Inc. v. Cardiac Pacemakers, Inc.*, 721 F.2d 1563, 1575, 220 USPQ 97, 105 (Fed. Cir. 1983); *Stratoflex, Inc.*, 713 F.2d at 1538-39, 218 USPQ at 879; *In re Sernaker*, 702 F.2d 989, 996, 217 USPQ 1, 7 (Fed. Cir. 1983); *In re Mageli*, 470 F.2d 1380, 1383, 176 USPQ 305, 307 (CCPA 1973). IPC offered affidavit and deposition evidence, by two experts in telephone systems and by a Bell system engineer knowledgeable in the field of trader turrets. Their uncontroverted testimony was to the effect that the Feil system was perceived at the time as an exceptional technological achievement.

The requirement that "secondary considerations" be considered in determinations under section 103 aids in evaluating the state of the art at the time the invention was made. *In re Piasecki*, 745 F.2d 1468, 1475, 223 USPQ 785, 790 (Fed. Cir. 1984). It is not pertinent that the invention was easily understood after it was made — a factor that appears to have been considered significant by the district court, see 543 F.Supp. at 619, 215 USPQ at 741 — but whether it would have been obvious to make the invention at the time. Giving due weight to the market success and contemporaneous reaction to the Feil trader turret system, the record does not contain clear and convincing evidence that the Feil invention of the reissue claims would have been obvious to one

of ordinary skill in this art at the time the invention was made.

Reissue claims 2-9 are either dependent on reissue claim 1, include similar limitations, or include additional limitations. Although each claim has been considered separately, they need not here be treated in redundant detail. For each claim we are compelled to the conclusion that the burden of proving invalidity by clear and convincing evidence has not been met.

The summary judgment of invalidity of Reissue Patent No. 31,144, in terms of 35 U.S.C. § 103, is vacated, as is the dismissal of the infringement claim. The case is remanded to the district court for further proceedings consistent herewith.

VACATED and REMANDED.

District Court, S.D. New York

The Authors League of America, Inc., et al. v. Davis L. Ladd, Register of Copyrights, et al.

No. 82 Civ. 5731

Decided October 8, 1985.

COPYRIGHTS

1. In general (§24.01)

Copyright Act's manufacturing clause, which prohibits importation or public distribution within U.S. of certain copyrighted publications which are written by American authors or domiciliaries and which are manufactured abroad, does not violate First Amendment.

Action by The Authors League of America, Inc., and Irwin Karp, The Association of America Publishers, Plaintiff-Intervenor, against David L. Ladd, Register of Copyrights, James Baker, Secretary of the Treasury, and William Von Raab, Commissioner, United States Customs Service, to challenge the constitutionality of Copyright Act "manufacturing clause," 17 USC 601-603. On defendants' motion to dismiss and on parties' cross-

court's Finding 125 that R&H good faith" belief that examiner reciated the information supplied cations is irrelevant. In this mat- had to rely on the applicant but, l's lengthy interview summaries, s devoid of any documentation t the PTO was told that any ations had been made or precise- y had been made. Such express as necessary to meet R&H's ould have alerted the PTO to the reconsidering rejections which withdrawn as a result of those

ing the realities of the situation tems said to have been discussed Thomas in the pivotal 2½-hour e regard the court's conclusion of was "fully informed of all the rial to the patentability of the med," (Conclusion of Law 33) as hen the whole record is consid- onclusion that he was "fully in- ts solely on the presentation to untain of largely irrelevant data he is presumed to have been able, ertise and with adequate time, to the critical data. It ignores the onditions under which examiners

Thomas' deposition testimony in- he had forgotten nearly all of ned at the interview, he was quite at did not happen, stating that twenty-seven years of experience O had anyone ever brought their duct to his attention. Therefore, of the fact that there is no written any disclosure that there had been srepresentations, to say nothing of ic correction, we hold that the re" was insufficient as a matter of tion "3" is answered in the

Conclusion.

ilson and McRae patent No. s held invalid because of fraud in and Trademark Office in its pro- The decision of the trial court alid is therefore reversed, and the unded for further proceedings con- with.

Costs

ave considered appellants' "Mo- x Printing Costs" filed June 16, appellee's opposition thereto filed

June 22, 1983. These two papers, filed before decision, deal only with the printing of the Combined Appendix of ten volumes said to contain a total of 9,307 pages, 5,743 of which were designated by appellee after appellants had initially designated the balance. There is an excessively detailed dispute over how many of the pages designated by appellee were necessary. Appellee appears not to have contributed to the cost of printing the appendix, which cost, paid by appellants, is said to have been \$31,850.15. Federal Rule of Appellate Procedure (FRAP) 30(b) authorizes us to impose upon a party the cost of printing material "unnecessarily" included. FRAP Rule 39(a) provides that, in the absence of an order by the court, in the case of a reversal "costs shall be taxed against the appellee."

Having considered the foregoing, we have a clear appreciation of the impossibility of determining, within reason, exactly what was or was not necessarily included in the appendix in this extended and complex litigation. We conclude that, under all of the circumstances with which we have necessarily become familiar in deciding this case, it is fair and equitable that the parties share equally the cost of printing the Combined Appendix and that otherwise each party bear its own costs. In accordance with Rule 39(a), it is so ordered.

Reversed and Remanded.

Miller, Circuit Judge, concurring in part.

Although I agree with the majority's analysis and holding on the fraud issue, it seems appropriate to state my conclusion that, because of the unpredictability of propanil in 1957, the district court erred in granting R&H an April 4, 1957, date of conception rather than a date, concurrent with a reduction to practice, in the summer of 1957 — after the May 27, 1957, date of filing of Monsanto's application, so that the Monsanto patent constitutes a 35 U.S.C. §102(e) bar to the R&H patent. *Alpert v. Slatin*, 305 F.2d 891, 896, 134 USPQ 296, 301 (CCPA 1962).

Court of Appeals, Federal Circuit

W.L. Gore & Associates, Inc.
v. Garlock, Inc.

Nos. 83-613/614

Decided Nov. 14, 1983

PATENTS

1. Court of Appeals for the Federal Circuit — Weight given decision reviewed (\$26.59)

Parties' argument relating to salutary injunction of ERCivP 52(a) cannot be controlling on all issues, where dispositive legal error occurred in interpretation and application of patent statute, 35 USC.

2. Court of Appeals for the Federal Circuit — Weight given decision reviewed (\$26.59)

Findings that rest on erroneous view of law may be set aside on that basis.

3. Construction of specification and claims — Claim defines invention (\$22.30)

Claims measure and define invention.

4. Construction of specification and claims — Combination claims (\$22.35)

Infringement — Process patents (\$39.65)

Court's restriction of claimed multi-step process to one step constitutes error, whether done at behest of patentee relying on that restriction to establish infringement by one who employs only that one step in process otherwise distinct, or at behest of accused infringer relying on that restriction to establish invalidity by showing that one step in prior art process otherwise distinct; invention must be considered as whole.

5. Court of Appeals for the Federal Circuit — Weight given decision reviewed (\$26.59)

CAFC is not at liberty to substitute its own for district court's findings underlying district court's conclusion that claim is invalid.

6. Patentability — Anticipation — Process (\$51.225)

It is irrelevant that those using invention may not have appreciated results where patent owner's operation of device is consistent, reproducible use of claimed invention; were that alone enough to prevent anticipation, it would be possible to obtain patent for old and unchanged process.

7. Use and sale — Extent and character of use (§69.5)

Nonsecret use of claimed process in usual course of producing articles for commercial purposes is public use.

8. Use and sale — Extent and character of use (§69.5)

Patentees' commercialization of product produced by its patented process can result in forfeiture of patent granted them for that process on application filed by them more than one year later; however, their secret commercialization of process cannot be bar to patent grant on that process.

9. Patent grant — Intent of patent laws (§50.15)

Early public disclosure is linchpin of patent system.

10. Interference — Priority (§41.70)

Law disfavors prior inventor who benefits from process by selling its product but suppresses, conceals, or otherwise keeps process from public, as against later inventor who promptly files patent application from which public will gain disclosure of process.

11. Patentability — Evidence of — In general (§51.451)

District court that in its consideration of prior art disregarded unpredictability and unique nature of product to which claimed inventions relate errs.

12. Construction of specification and claims — By prior art (§22.20)

District court that in its consideration of prior art considers claims in less than their entireties errs.

13. Patentability — Evidence of — Suggestions of prior art (§51.469)

District court that considers references in less than their entireties, i.e., in disregarding disclosures in references that diverge from and teach away from invention at hand, errs.

14. Construction of specification and claims — Comparison with other claims (§22.40)

Claims must be considered individually and separately.

15. Patentability — Anticipation — Combining references (§51.205)

There must have been something present in teachings in references to suggest to one skilled in art that claimed invention before court would have been obvious.

16. Patentability — Evidence of — Suggestions of prior art (§51.469)

Fact that patentee proceeded contrary to accepted wisdom of prior art is strong evidence of nonobviousness.

17. Patentability — Tests of — Skill of art (§51.707)

Imbuing one of ordinary skill in art with knowledge of invention in suit, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to insidious effect of hindsight syndrome wherein that which only inventor taught is used against its teacher.

18. Patentability — Invention — In general (§51.501)

Patentability — Tests of — Skill of art (§51.707)

Decisionmaker must forget what he or she has been taught at trial about claimed invention and cast mind back to time invention was made to occupy mind of one skilled in art who is presented only with references, and who is normally guided by then-accepted wisdom in art.

19. Pleading and practice in courts — Burden of proof — Validity (§53.138)

Presumption for patent grant — Patent Office consideration of prior art (§55.5)

It is not law that presumption of validity is weakened greatly where Patent Office has failed to consider pertinent prior art; presumption has no separate evidentiary value; it cautions decisionmaker against rush to conclude invalidity; submission of additional art that is merely "pertinent" does not dispel that caution; however, inescapable burden of persuasion on one who would prove invalidity remains throughout trial.

20. Pleading and practice in courts — Burden of proof — Validity (§53.138)

Presumption from patent grant — Patent Office consideration of prior art (§55.5)

Burden of proving invalidity may be facilitated by prior art that is more pertinent than that considered by PTO.

21. Patentability — Evidence of — In general (§51.451)

District court that specifically declines to consider objective evidence of nonobviousness errs; that evidence can often serve as insur-

Patentability — Evidence of — Suggestions of prior art (§51.469)

Patentee proceeded contrary to wisdom of prior art is strong evidence of nonobviousness.

Patentability — Tests of — Skill of art (707)

One of ordinary skill in art with knowledge of invention in suit, when no prior art or references of record convey or suggest knowledge, is to fall victim to hindsight syndrome where only inventor taught is used as teacher.

Patentability — Invention — In general (§1.501)**Patentability — Tests of — Skill of art (707)**

Decisionmaker must forget what he or she taught at trial about claimed invention and go back to time invention was made in mind of one skilled in art who is aided only with references, and who is guided by then-accepted wisdom in the art.

Patentability — Invention — In general (§1.501)**Patentability — Invention — In general (§1.501)**

Law that presumption of validity is greatly where Patent Office has considered pertinent prior art; precludes no separate evidentiary value; it is decisionmaker against rush to conclusion; submission of additional art merely "pertinent" does not dispel that burden; however, inescapable burden of persuasion is on one who would prove invalidity throughout trial.

Patentability — Invention — In general (§1.501)**Patentability — Invention — In general (§1.501)**

Of proving invalidity may be facilitated by prior art that is more pertinent than that offered by PTO.

Patentability — Evidence of — In general (§51.451)

Court that specifically declines to consider objective evidence of nonobviousness evidence can often serve as insurance.

Insurance against insidious attraction of hindsight when confronted with difficult task of evaluating prior art; even when prior art evidence points more in direction of nonobviousness than obviousness, objective evidence may tend to reassure decisionmaker.

22. Patentability — Anticipation — In general (§51.201)

Anticipation requires disclosure in single prior art reference of each element of claim under consideration.

23. Patentability — Anticipation — Process (§51.225)**Patentability — Composition of matter (§51.30)**

Anticipation of inventions set forth in product claims cannot be predicated on mere conjecture respecting characteristics of products that might result from practice of processes disclosed in references.

24. Patentability — Anticipation — Infringement as test (§51.211)

Accused infringer's employment of process of dominating patent is not anticipation of invention described and claimed in improvement patent.

25. Patentability — Anticipation — In general (§51.201)**Patentability — Invention — In general (§51.501)**

Inherency and obviousness are distinct concepts.

26. Patentability — Evidence of — In general (§51.451)

All evidence bearing on obviousness issue, as with any other issue raised in conduct of judicial process, must be considered and evaluated before required legal conclusion is reached.

27. Patentability — Evidence of — In general (§51.451)

Objective evidence of nonobviousness, i.e., "indicia" of *Graham v. John Deere Co.*, 148 USPQ 459, may in given case be entitled to more weight or less, depending on its nature and its relationship to invention's merits; it may be most pertinent, probative, and revealing evidence available to aid in reaching conclusion on obvious/nonobvious issue.

28. Patentability — Evidence of — Commercial success — In general (§51.4551)

Praise greeting products claimed in patent from suppliers, including owner of prior art

patent, is objective evidence of nonobviousness.

29. Patentability — Composition of matter (§51.30)

Claim to new product is not required to include critical limitations.

30. Specification — Sufficiency of disclosure (§62.7)

Patents are written to enable those skilled in art to practice invention, not public; and Section 112 speaks as of application filing date, not as of time of trial.

31. Specification — Sufficiency of disclosure (§62.7)

Section 112 requires that inventor set forth best mode of practicing invention known to him at time application was filed.

32. Claims — Indefinite — In general (§20.551)

Use of "stretching at rate exceeding specific percent per second" in claims is not indefinite.

33. Claims — Specification must support (§20.85)

It is claimed invention for which enablement is required.

34. Specification — Sufficiency of disclosure (§62.7)

Patent is not invalid merely because some experimentation is needed; patent is invalid only when those skilled in art are required to engage in undue experimentation to practice invention.

35. Construction of specification and claims — Claim defines invention (§22.30)

Distinguishing what infringes from what does not is role of claims, not of specification.

36. Construction of specification and claims — Defining terms (§22.45)

Patent applicant can be his own lexicographer.

37. Defenses — Fraud (§30.05)

Fraud must be shown by clear and convincing evidence; state of mind of one making representations is most important of elements to be considered in determining existence of fraud; good faith and subjective intent; while they are to be considered, should not necessarily be made controlling; under ordinary circumstances, fact of misrepresentation coup-

led with proof that party making it had knowledge of its falsity is enough to warrant drawing inference that there was fraudulent intent; where public policy demands complete and accurate disclosure it may suffice to show nothing more than that misrepresentations were made in atmosphere of gross negligence as to their truth.

38. Pleading and practice in courts — Issues determined — Validity and infringement (§53.505).

Better practice is for district court to decide both validity and infringement issues when both are contested at trial, enabling conduct of single appeal and disposition of entire case in single appellate opinion.

39. Infringement — Tests of — Comparison with claim (§39.803)

Infringement is decided with respect to each asserted claim as separate entity.

Particular patents — Porous Products

3,953,566, Gore, Process for Producing Porous Products, holding of invalidity of claims 3 and 19 reversed and of claims 1 and 17 affirmed.

4,187,390, Gore, Porous Products and Process Therefor, holding of invalidity reversed.

Appeal from District Court for the Northern District of Ohio, Manos, J.; 220 USPQ 220.

Consolidated actions by W. L. Gore & Associates, Inc., against Garlock, Inc., for patent infringement, in which defendant counterclaims for declaratory judgment of patent invalidity, noninfringement, fraudulent solicitation, and entitlement to attorney fees. From judgment for defendant, plaintiff appeals and defendant cross-appeals. Affirmed in part, reversed in part, and remanded; Davis, Circuit Judge, concurring in result in part and dissenting in part, with opinion.

David H. Pfeffer, New York, N.Y. (J. Robert Dailey and Janet Dore, both of New York, N.Y., and John S. Campbell, Newark, Del., of counsel) for appellant.

John J. Mackiewicz, Philadelphia, Pa. (Dale M. Heist, Philadelphia, Pa., on the brief, Bernard Ouziel, New York, N.Y., of counsel) for appellee.

Before Markey, Chief Judge, and Davis and Miller, Circuit Judges.

Markey, Chief Judge.

Appeal from a judgment of the District Court for the Northern District of Ohio holding U.S. Patents 3,953,566 ('566) and 4,187,390 ('390) invalid. We affirm in part, reverse in part, and remand for a determination of the infringement issue.

Background

Tape of unsintered polytetrafluorethylene (PTFE) (known by the trademark TEFLON of E.I. du Pont de Nemours, Inc.) had been stretched in small increments. W. L. Gore & Associates, Inc. (Gore), assignee of the patents in suit, experienced a tape breakage problem in the operation of its "401" tape stretching machine. Dr. Robert Gore, Vice President of Gore, developed the invention disclosed and claimed in the '566 and '390 patents in the course of his effort to solve that problem. The 401 machine was disclosed and claimed in Gore's U.S. Patent 3,664,915 ('915) and was the invention of Wilbert L. Gore, Dr. Gore's father. PTFE tape had been sold as thread seal tape, i.e., tape used to keep pipe joints from leaking. The '915 patent, the application for which was filed on October 3, 1969, makes no reference to stretch rate, at 10% per second or otherwise, or to matrix tensile strength in excess of 7,300 psi.

Dr. Gore experimented with heating and stretching of highly crystalline PTFE rods. Despite slow, careful stretching, the rods broke when stretched a relatively small amount. Conventional wisdom in the art taught that breakage could be avoided only by slowing the stretch rate or by decreasing the crystallinity. In late October 1969, Dr. Gore discovered, contrary to that teaching, that stretching the rods as fast as possible enabled him to stretch them to more than ten times their original length with no breakage. Further, though the rod was thus greatly lengthened, its diameter remained virtually unchanged throughout its length. The rapid stretching also transformed the hard, shiny rods into rods of a soft, flexible material.

Gore developed several PTFE products by rapidly stretching highly crystalline PTFE, including: (1) porous film for filters and laminates; (2) fabric laminates of PTFE film bonded to fabric to produce a remarkable material having the contradictory properties of impermeability to liquid water and permeability to water vapor, the material being used to make "breathable" rainwear and filters; (3) porous yarn for weaving and braiding into other products, like space suits and pump packing; (4) tubes used as replacements for human arteries and veins; and (5) insulation for high performance electric cables.

a judgment of the District Court of Ohio holding the '566 patent invalid. We affirm in part, and remand for a determination of the infringement issue.

Background

intered polytetrafluorethylene by the trademark TEFLON (E. I. du Pont de Nemours & Co., Inc.) had been all increments. W. L. Gore & Associates, Inc. (Gore), assignee of the patent, experienced a tape breakage in operation of its "401" tape machine. Dr. Robert Gore, Vice President, developed the invention claimed in the '566 and '390 patents. In the course of his effort to solve that problem, Dr. Gore disclosed and described his U.S. Patent 3,664,915, which is the invention of Wilbert L. Gore, Dr. Gore's father. PTFE tape had been used to read seal tape, i.e., tape used to seal from leaking. The '915 patent, for which was filed on October 19, 1969, makes no reference to stretching at 10% per second or otherwise, and tensile strength in excess of 7,300 psi.

Dr. Gore experimented with heating and stretching highly crystalline PTFE rods. By careful stretching, the rods were stretched a relatively small amount. Conventional wisdom in the art was that leakage could be avoided only by stretching at a high rate or by decreasing the stretching rate. In late October 1969, Dr. Gore, contrary to that teaching, that stretching rods as fast as possible enabled them to more than ten times their original length with no breakage. Further, the rod was thus greatly lengthened and remained virtually unchanged throughout its length. The rapid stretching transformed the hard, shiny rods into a soft, flexible material. Dr. Gore developed several PTFE products by stretching highly crystalline PTFE, including a porous film for filters and laminated fabric laminates of PTFE film and fabric to produce a remarkable material having the contradictory properties of being impervious to liquid water and permeable to water vapor, the material being referred to as "breathable" rainwear and filter fabric. Dr. Gore developed products, like space suits and gaskets; (4) tubes used as replacements for arteries and veins; and (5) insulating performance electric cables.

On May 21, 1970, Gore filed the patent application that resulted in the patents in suit. The '566 patent has 24 claims directed to processes for stretching highly crystalline, unsintered, PTFE. The processes, inter alia, include the steps of stretching PTFE at a rate above 10% per second and at a temperature between about 35°C and the crystalline melt point of PTFE. The '390 patent has 77 claims directed to various products obtained by processes of the '566 patent.

It is effectively undisputed that the present inventions filled a long sought yet unmet need. The United States Army and the research director of a Garlock Inc. (Garlock) customer had been looking for and following up every remote lead to a waterproof/breathable material for many years.

It is undisputed that the present inventions enjoyed prompt and remarkable commercial success due to their merits and not to advertising or other extraneous causes.

It is undisputed that the inventions provide the most important synthetic material available for use in vascular surgery, hundreds of thousands of persons having received artificial arteries formed of the patented products since 1976, and that the patented products have unique properties useful in other medical procedures, in communications satellites, radar systems, and electrical applications.

It is undisputed that the major sources of PTFE, ICI and du Pont, greeted the patented products as "magical," "bewitching," "a remarkable new material," and one that "differs from other processed forms of Teflon."

It is undisputed that the patented products were met with skepticism and disbelief by at least one scientist who had worked with PTFE at du Pont for many years and who testified as an expert at trial.

It is undisputed that Garlock first produced an accused product in response to a customer's request for a substitute for the patented product, that Garlock advertised its accused product as a "new form" of PTFE and as "a versatile new material which provides new orders of performance for consumer, industrial, medical and electrical applications," and that the customer describes that accused product as "a new dimension in rainproof/breathable fabrics."

Proceedings

On Nov. 2, 1979, Gore sued Garlock for infringement of process claims 3 and 19 of the '566 patent, and sought injunctive relief, damages and attorney fees. Garlock counterclaimed on Dec. 18, 1979, for a declaratory judgment of patent invalidity, non-infringe-

ment, fraudulent solicitation, and entitlement to attorney fees. On Feb. 7, 1980, Gore filed a second suit for infringement of product claims 14, 18, 36, 43, 67 and 77 of the '390 patent. In light of a stipulation, the district court consolidated the two suits for trial.

Gore alleged infringement of certain claims by certain products:

'566 patent claims	'390 patent claims	Garlock Product
19	14,43	film
--	36,77	laminated
19	18	yarn
--	67	braided packing
3	--	tape

At trial, Garlock addressed only claims 1, 3, 17, and 19 of the '566 patent and claims 1, 9, 12, 14, 18, 35, 36, 43, 67 and 77 of the '390 patent. See Appendix to this opinion.

The district court, in a thorough memorandum accompanying its judgment, and in respect of the '566 patent: (1) found claim 1 anticipated under 35 U.S.C. §102(a) by Gore's use of its 401 machine and use by the Budd Company (Budd) of a Cropper machine; (2) declared all claims of the patent invalid under 102(b) because the invention had been in public use and on sale more than one year before Gore's patent application; as evidenced by Budd's use of the Cropper machine; (3) held claims 1, 3, 17 and 19 invalid for obviousness under 35 U.S.C. §103, on the basis of various reference pairings: (a) Japanese patent 13560/67 (Sumitomo) with U.S. patent 3,214,503 (Markwood); (b) U.S. patent 2,776,465 (Smith) with Markwood; or (c) Gore's '915 patent with Sumitomo; and (4) held all claims invalid as indefinite under 35 U.S.C. §112.

35 U.S.C. §102(a) and (b) provide:

A person shall be entitled to a patent unless—
(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States, or ***

35 U.S.C. §103 provides:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

In its opinion respecting the '390 patent, the district court held: (1) claims 1, 9, 12, 14, 18, 35, 36, 43, 67 and 77 invalid §§102 and 103 in view of Sumitomo and Smith; and (2) all claims invalid as indefinite under §112.

The court found that Gore did not commit fraud before the Patent and Trademark Office (PTO), denied Garlock's request for attorney fees, and refrained from deciding the infringement issue.

Issues

Did the district court err in: (1) its holding of invalidity under §§102(a), 102(b), 103 and 112; (2) its finding that Gore did not commit fraud on the PTO; or (3) denying attorney fees.

Opinion

This hard fought and bitterly contested case involved over two years of discovery, five weeks of trial, the testimony of 35 witnesses (19 live, 16 by deposition), and over 300 exhibits. The district court issued an exhaustive 37-page memorandum opinion reflective of a careful, conscientious approach to the determination of the many issues presented at trial.

The record on appeal consists of 2000 pages. The parties' briefs total 199 pages. In those briefs, counsel repeatedly accuse each other of numerous and serious breaches of the duty of candor owed the court. Each cites instances in which the testimony, the findings, and the record are or are said to be quoted in part and out of context. As a result, the usefulness and reliability of the briefs as means of informing the court has been greatly diminished if not destroyed, and careful, time-consuming study of all exhibits and each page of the record has been required.

35 U.S.C. §112 provides:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. A claim may be written in independent or dependent form, and if in dependent form, it shall be construed to include all the limitations of the claim incorporated by reference into the dependent claim.

Appellant cited 80 prior court opinions in its main brief. Appellee's brief totally ignores all but two of those citations, but adds 57 more. Appellant's reply brief cites 126 prior court opinions, 34 earlier cited; 67 newly cited, and 25 of those cited by appellee. Appellee's reply brief cites 17 prior court opinions, 4 earlier cited, 7 newly cited, and 6 of the 147 cited by appellant. Accordingly, 211 prior court opinions have been evaluated in relation to the proof found in the record.

In light of the entire record and the applicable law, we are convinced that Garlock failed to carry its burden of proving all claims of the present patents invalid.

Standard of Review

[1,2] Where, as here, dispositive legal error occurred in interpretation and application of the patent statute, 35 U.S.C., the parties' arguments relating to the salutary injunction of Fed. Rule Civ. P. 52(a) cannot be controlling on all issues. Though findings that "rest on an erroneous view of the law may be set aside on that basis," *Pullman-Standard v. Swint*, 456 U.S. 273 (1982), it is unnecessary here to set aside any probative fact found by the district court or to engage in what would be an inappropriate reweighing of the facts.

Among the legal errors extant in the record, each of which is discussed below, are (1) the invention set forth in each claim was not in each instance considered as a whole; (2) 35 U.S.C. §102(b) was applied though criteria for its application were not present; (3) the references were not assessed in their entireties; (4) an inherency theory under §§102 and 103 was inappropriately applied; (5) that which only the inventor taught was attributed to the prior art; (6) individual steps in prior art processes dealing with materials distinct from those with which the present inventions dealt were erroneously equated to steps in the claimed processes; (7) objective evidence of nonobviousness was disregarded; and (8) the function and application of §112 were misconstrued.

Because it permeated so much of the district court's analysis, we note more fully its frequent restriction of its consideration to 10% per second rate of stretching, which it called the "thrust of the invention." That approach is repeated throughout Garlock's briefs, which refer repeatedly to the "thrust of the invention," to "the inventive concept," and to the claims "shorn of their extraneous limitations." That facile focusing on the "thrust," "concept," and "shorn" claims, resulted in treating the claims at many points as though they read differently from those actually allowed and in suit.

cited 80 prior court opinions in Appellee's brief totally ignores of those citations, but adds 57. Plaintiff's reply brief cites 126 prior opinions, 34 earlier cited, 67 newly cited of those cited by appellee. Appellant's brief cites 17 prior court opinions cited, 7 newly cited, and 6 of those cited by appellee. Accordingly, 211 opinions have been evaluated in the proof found in the record.

If the entire record and the application are convinced that Garlock's burden of proving all claims in its patents invalid.

Standard of Review

Here, as here, dispositive legal error in interpretation and application of statute, 35 U.S.C., the parties' relating to the salutary injunction Civ.P. 52(a) cannot be controlling. Though findings that "rest on a view of the law may be set aside," Pullman-Standard v. Swint, 3 (1982), it is unnecessary here to rely on probative fact found by the court or to engage in what would be an inappropriate reweighing of the facts.

The legal errors extant in the record which is discussed below, are (1) not set forth in each claim; was not once considered as a whole; (2) 35 U.S.C. 102(b) was applied though criteria for anticipation were not present; (3) the prior art were not assessed in their entirety under the prior art theory under §§102 and 103; (4) that the prior art was inappropriately applied; (5) that the inventor taught was attributed to the prior art; (6) individual steps in prior art dealing with materials distinct from which the present inventions were erroneously equated to steps in the prior art; (7) objective evidence of prior art was disregarded; and (8) the application of §112 were not followed.

It permeated so much of the analysis, we note more fully. Its restriction of its consideration to a condition of stretching, which it "thrust of the invention." That is repeated throughout Garlock's brief and refer repeatedly to the "thrust of the invention," to "the inventive concept," claims, "shorn of their extraneous." That facile focusing on the "concept," and "shorn" claims, treating the claims at many points as read differently from those actually and in suit.

[3] It is true that Dr. Gore emphasized rapid stretching, for example, as well as the amount of stretch and other process limitations, during prosecution of the application for the '566 patent. Yet it is the claims that measure and define the invention. *Aro Manufacturing Co. v. Convertible Top Replacement Co.*, 365 U.S. 336, 339, 128 USPQ 354 (1961); *Bowser, Inc. v. U.S.*, 388 F.2d 346, 349, 156 USPQ 406, 409 (Ct. Cl. 1967).

[4] Each claimed invention must be considered as a whole. 35 U.S.C. §103; *Schenck, A.G. v. Nortron Corp.*, 218 USPQ 698, 700 (Fed. Cir. 1983). In determining obviousness, there is "no legally recognizable or protected 'essential,' 'gist,' or 'heart' of the invention." *Aro*, 365 U.S. at 345. A court's restriction of a claimed multi-step process to one step constitutes error, whether done at the behest of a patentee relying on that restriction to establish infringement by one who employs only that one step in a process otherwise distinct, or at the behest of an accused infringer relying on that restriction to establish invalidity by showing that one step in a prior art process otherwise distinct.

(1) Invalidity

(a) '566 Patent

(i) §102(a) and The 401 Machine

It is undisputed that the district court held only claim 1 of the '566 patent to have been anticipated under §102(a) by operation of the 401 machine in the Gore shop before Dr. Gore's invention in late-October 1969. It did so on the deposition testimony of two former Gore employees, documents, and drawings of the 401 machine.

In August 1969, Gore offered to sell to Export Tool Company (Export) tape "to be made" on the 401 machine. Tape made on the 401 machine was shipped to Export on October 24, 1969. The trial judge found the rolls on the 401 machine were, at least at some point in time before October 1969, spaced less than four feet apart and that the rate of stretch accomplished in operating that machine (admittedly operated in accord with the description of machine operation in the '915 patent) must have been greater than 10% per second. The district court credited testimony that Teflon 6-c, a highly crystalline form of Teflon, was used because it was the standard resin at the time, and that the tape was stretched at a temperature above 35°C. Thus it cannot be said that the record fails to support the district court's finding that the

limitations of claim 1 were met by Gore's operation of the 401 machine before Dr. Gore's asserted "late October 1969" date of invention. Though he was working with the operation of the 401 machine, Dr. Gore offered no proof that his invention date was before the date of shipment to Export.

[5] Gore, seeking a review here of the evidence, points to certain inadequacies as indicating a failure to meet the required clear and convincing standard under §102(a). At the time of trial, the district court, bound by precedent then applicable, applied a preponderance of the evidence test. Gore asserts, erroneously, that the clearly erroneous standard does not therefore apply on this appeal. Gore does not, however, point to any basis on which the district court's findings must be held to have been clearly erroneous under the clear and convincing standard. We are not at liberty, of course, to substitute our own for the district court's findings underlying its conclusion that claim 1 is invalid.

[6] Gore's operation of the 401 machine must thus be viewed as a consistent, reproducible use of Dr. Gore's invention as set forth in claim 1, and it is therefore irrelevant that those using the invention may not have appreciated the results. *General Electric Co. v. Jewel Incandescent Lamp Co.*, 326 U.S. 242, 248, 67 USPQ 155, 157-58 (1945). Were that alone enough to prevent anticipation, it would be possible to obtain a patent for an old and unchanged process. *Ansonia Brass & Copper Co. v. Electric Supply Co.*, 144 U.S. 11, 18 (1892); see, *H.K. Regar & Sons, Inc. v. Scott & Williams, Inc.*, 63 F.2d 229, 231, 17 USPQ 81, 83 (2d Cir. 1933).

[7] The nonsecret use of a claimed process in the usual course of producing articles for commercial purposes is a public use. *Electric Storage Battery Co. v. Shimadzu*, 307 U.S. 5, 20, 41 USPQ 155, 161 (1939); and there was no evidence that any different process was used to produce the articles shipped to Export.

Thus it cannot be said that the district court erred in determining that the invention set forth in claim 1 of '566 patent was known or used by others under §102(a), as evidenced by Gore's operation of the 401 machine before Dr. Gore's asserted date of that invention.

In view of our affirmance of the judgment reached on claim 1 under 102(a), we need not discuss other asserted grounds of invalidity of claim 1. There was, however, no evidence whatever that the inventions set forth in other claims, of either the '566 or the '390 patent, were known or used by others as a result of Gore's operation of the 401 machine before late-October 1969.

(ii) §102(b) and the Cropper Machine

In 1966 John W. Cropper (Cropper) of New Zealand developed and constructed a machine for producing stretched and unstretched PTFE thread seal tape. In 1967, Cropper sent a letter to a company in Massachusetts, offering to sell his machine, describing its operation, and enclosing a photo. Nothing came of that letter. There is no evidence and no finding that the present inventions thereby became known or used in this country.

In 1968, Cropper sold his machine to Budd, which at some point thereafter used it to produce and sell PTFE thread seal tape. The sales agreement between Cropper and Budd provided:

ARTICLE "E" - PROTECTION OF TRADE SECRETS Etc.

1. BUDD agrees that while this agreement is in force it will not reproduce any copies of the said apparatus without the express written permission of Cropper nor will it divulge to any person or persons other than its own employees or employees of its affiliated corporations any of the said known-how or any details whatsoever relating to the apparatus.

2. BUDD agrees to take all proper steps to ensure that its employees observe the terms of Article "E" 1 and further agrees that whenever it is proper to do so it will take legal action in a Court of competent jurisdiction to enforce any one or more of the legal or equitable remedies available to a trade secret plaintiff.

Budd told its employees the Cropper machine was confidential and required them to sign confidentiality agreements. Budd otherwise treated the Cropper machine like its other manufacturing equipment.

A former Budd employee said Budd made no effort to keep the secret. That Budd did not keep the machine hidden from employees legally bound to keep their knowledge confidential does not evidence a failure to maintain the secret. Similarly, that du Pont employees were shown the machine to see if they could help increase its speed does not itself establish a breach of the secrecy agreement. There is no evidence of when that viewing occurred. There is no evidence that a viewer of the machine could thereby learn anything of which process, among all possible processes, the machine is being used to practice. As Cropper testified, looking at the machine in operation does not reveal whether it is stretching, and if so, at what speed. Nor does looking disclose whether the crystallinity and temperature elements of the invention set

forth in the claims are involved. There is no evidence that Budd's secret use of the Cropper machine made knowledge of the claimed process accessible to the public.

The district court held all claims of the '566 patent invalid under 102(b), supra, note 3, because "the invention" was "in public use [and] on sale" by Budd more than one year before Gore's application for patent. Beyond a failure to consider each of the claims independently, 35 U.S.C. §282; *Altoona Publix Theatres, Inc. v. American Tri-Ergon Corp.*, 294 U.S. 477, 487, 24 USPQ 308 (1935), and a failure of proof that the claimed inventions as a whole were practiced by Budd before the critical May 21, 1969 date, it was error to hold that Budd's activity with the Cropper machine, as above indicated, was a "public" use of the processes claimed in the '566 patent, that activity having been secret, not public.

Assuming, arguendo, that Budd sold tape produced on the Cropper machine before October 1969, and that that tape was made by a process set forth in a claim of the '566 patent, the issue under §102(b) is whether that sale would defeat Dr. Gore's right to a patent on the process inventions set forth in the claims.

[8] If Budd offered and sold anything, it was only tape, not whatever process was used in producing it. Neither party contends, and there was no evidence, that the public could learn the claimed process by examining the tape. If Budd and Cropper commercialized the tape, that could result in a forfeiture of a patent granted them for their process on an application filed by them more than a year later. *D.L. Auld Co. v. Chroma Graphics Corp.*, No. 83-585, slip op. at 5-6 (Fed. Cir. Aug. 15, 1983); See *Metalizing Engineering Co. v. Kenyon Bearing & Auto Parts Co.*, 153 F.2d 516, 68 USPQ 54 (2d Cir. 1946). There is no reason or statutory basis, however, on which Budd's and Cropper's secret commercialization of a process, if established, could be held a bar to the grant of a patent to Gore on that process.

[9;10] Early public disclosure is a linchpin of the patent system. As between a prior inventor who benefits from a process by selling its product but suppresses, conceals, or otherwise keeps the process from the public, and a later inventor who promptly files a patent application from which the public will gain a disclosure of the process, the law favors the latter. See *Horwath v. Lee*, 564 F.2d 948, 195 USPQ 701 (CCPA, 1977). The district court therefore erred as a matter of law in applying the statute and in its determination that Budd's secret use of the Cropper machine and sale of tape rendered all process

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o, that Budd sold tape per machine before Oc- hat tape was made by a laim of the '566 patent, b) is whether that sale e's right to a patent on set forth in the claims.

l and sold anything, it atever process was used er party contends, and , that the public could ccess by examining the roprier commercialized sult in a forfeiture of a for their process on an hem more than a year . v. Chroma Graphics ip op. at 5-6 (Fed. Cir. Metalizing Engineering ng & Auto Parts Co., PQ 54 (2d Cir. 1946). statutory basis, howev- and Cropper's secret process, if established, the grant of a patent to

disclosure is a linchpin . As between a prior from a process by sell- uppresses, conceals, or rocess from the public, who promptly files a n which the public will process, the law favors h. v. Lee, 564 F.2d 948, PA. 1977). The district as a matter of law in nd in its determination e of the Cropper ma- e rendered all process

claims of the '566 patent invalid under §102(b).

(iii) §103

In considering claims 1, 3, 17, and 19 of the '566 patent, the district court recognized that analysis of the obviousness issue under §103 requires determination of the scope and content of the prior art, the differences between the prior art and the claims at issue, and the level of ordinary skill in the pertinent art. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 USPQ 459, 467 (1966).

[11,12,13] In its consideration of the prior art, however, the district court erred in not taking into account the import of the markedly different behavior of PTFE from that of conventional thermoplastic polymers clearly established and undisputed on the record, and in thus disregarding the unpredictability and unique nature of the unsintered PTFE to which the claimed inventions relate. In *re* Whiton, 420 F.2d 1082, 164 USPQ 455 (CCPA 1970); in considering claims in less than their entireties, *Schenck*, supra; and in considering the references in less than their entireties, i.e., in disregarding disclosures in the references that diverge from and teach away from the invention at hand. In *re* Kuderma, 426 F.2d 385, 165 USPQ 575 (CCPA 1970).

Invalidity of claim 1 under §102(a) having been determined, it is unnecessary to discuss in detail the applicability of §103 to that claim. If claim 1 had not been held anticipated under §102(a) in light of operation of the 401 machine, it is clear from the discussion here that claim 1 could not properly have been held invalid under §103.

Claim 3 depends from and thus incorporates claim 1 but specifies a rate of stretch of 100% per second. Claim 17 also depends from claim 1 and specifies an amount of stretch of about twice the original length. Claim 19 depends from claim 17 but specifies an amount of stretch of about five times the original length.

U.S. patent 2,983,961 to Titterton; Volume 13 of the *Encyclopedia of Polymer Science and Technology* (1970); the Sumitomo patent, and witnesses for both parties, establish that teachings related to conventional thermoplastic polymers are inapplicable to PTFE.

Articles by Dogliotti and Yelland, *Effect of Strain Rate on the Viscoelastic Properties of High Polymeric Fibrous Materials*, 4 *High Speed Testing* 211 (1964) and Robinson and Graham, *Methods of Characterization of Polymeric Materials by High Speed Testing Techniques*, 5 *High Speed Testing* 261

(1965), teach that conventional plastics and sintered PTFE can be stretched further if stretched slowly. Dr. Gore demonstrated at trial and at oral argument before us that an attempt to stretch highly crystalline, unsintered PTFE slowly results in breakage, and that rapid stretching produces a greatly lengthened rod of soft, flexible material.

The '566 patent contains an example of stretching an article to 16 times its length. Smith and the '915 patent teach that PTFE could not be stretched beyond four times its length without heating it to above its crystalline melt temperature, a step avoided by Dr. Gore and as set forth in the claims.

Sumitomo teaches that there is a length limit to stretching unsintered PTFE, and does not suggest what that limit might be. Markwood, U.S. patent 3,208,100 to Nash (Nash), and U.S. patent 2,823,421 to Scarlett (Scarlett) teach that *non-PTFE* thermoplastics can be stretched rapidly and to extended lengths, and also teach reduction, elimination, or avoidance of crystallinity before stretching.

The disclosure in the Smith and '915 patents that a PTFE article may be stretched to as much as four times its length encompasses the step of stretching to twice its length set forth in claim 17 and establishes that such step would have been obvious.

[14] Claims 3 and 19 must be considered individually and separately. 35 U.S.C. §282. Nowhere, in any of the references, is it taught or suggested that highly crystalline, unsintered PTFE could be stretched at a rate of about 100% per second as required by asserted claim 3. Nor is it anywhere suggested that by rapid stretching a PTFE article be stretched to more than five times its original length as required by asserted claim 19. On the contrary, the art as a whole teaches the other way.

[15] In concluding that obviousness was established by the teachings in various pairs of references, the district court lost sight of the principle that there must have been something present in those teachings to suggest to one skilled in the art that the claimed invention before the court would have been obvious. In *re* Bergel, 292 F.2d 955, 956-57, 130 USPQ 206, 208 (CCPA 1961); In *re* Sponnoble, 405 F.2d 578, 585, 160 USPQ 237, 244 (CCPA 1969).

The court's pairing of Sumitomo and Markwood disregarded, as above indicated, the undisputed evidence that the unsintered PTFE of Sumitomo does not respond to the conventional plastics processing of Markwood and the art recognition of that fact. Whiton, supra, 420 F.2d at 1085, 164 USPQ at 457.

In evaluating claim 19, for example, the pairing disregarded Sumitomo's limited

length of stretch teaching. In evaluating claim 3, the court recognized that Sumitomo made no mention of rate of stretch. Looking to Markwood to supply that teaching disregarded not only the conventional plastics-unsintered PTFE distinction but also the clear divergence of Markwood's teaching that crystallinity must be reduced or avoided from the presence of "highly crystalline" in all claims of the '566 patent.

Similarly, and for many of the same reasons, the pairing of Markwood's and Smith's teachings was an inappropriate basis for concluding that the processes set forth in claims 3 and 19 would have been obvious. As above indicated, Markwood's rapid stretching of conventional plastic polypropylene with reduced crystallinity would not suggest rapid stretching of highly crystalline PTFE, in light of teachings in the art that PTFE should be stretched slowly. The Smith patent is owned by du Pont, where Dr. Gore's process invention was considered to have produced a "remarkable new material." That circumstance is not surprising, for Smith, though dealing with PTFE, says not a word about any rate of stretch.

Lastly, the pairing of Sumitomo and the '915 patent suffers from the same shortcomings. The pairing resulted from a hypothetical set forth in Garlock's post trial brief, and was based on no testimony or other evidence in the record. In respect to claim 3, neither reference mentions rate of stretch or suggests its importance. In respect of claim 19 both references point away from the claimed invention in their limited length-of-stretch teachings. The '915 patent states: "the 65 percent expanded material could be expanded a second time for an additional 65 percent expansion or a total length increase ratio of 1:2.72 [less than three times the original length]. However, great care was necessary to obtain a uniformly expanded material at these very great expansion ratios." Thus the '915 patent suggests that the amount of stretch of 500% set forth in claim 19 (more than five times the original length) is not possible.

As indicated, Sumitomo and Smith are totally silent respecting the rate of stretch, and there is simply no teaching in the art that would suggest to one of ordinary skill that Markwood's fast stretching of other thermoplastics could or should be employed in the process of treating PTFE taught by either Sumitomo or Smith. Indeed, Smith not only says nothing about rate of stretch, its preferred teaching is away from other elements of the inventions set forth in claims 3 and 19. Smith discloses that stretching should be done after the PTFE is heated above its crystalline

melting point and with decreased crystallinity. Smith teaches:

Below about 300°C it is *not possible* to draw more than about 4X [times] and while such draw ratios can be attained around 300°C and below the polymer's crystalline melting point with resultant orientation and improved properties it is preferred to use temperatures at or above the polymer's crystalline melting point. (Emphasis added).

Nash teaches that the film should be plasticized, i.e., made more viscous, before stretching. Contrary to that teaching, Dr. Gore did not reduce crystallinity before increasing the rate of stretch, but maintained the unsintered PTFE "highly crystalline" while stretching at a 100% per second rate and to more than five times, as set forth respectively in claims 3 and 19.

[16] On the entire record and in view of all the references, each in its entirety, it is clear that a person of ordinary skill confronted with a PTFE tape breakage problem would have either slowed the rate of stretching or increased the temperature to decrease the crystallinity. Dr. Gore did neither. He proceeded contrary to the accepted wisdom of the prior art by dramatically increasing the rate and length of stretch and retaining crystallinity. That fact is strong evidence of nonobviousness. *United States v. Adams*, 383 U.S. 39 (1966).

Having learned the details of Dr. Gore's invention, the district court found it within the skill of the art to stretch other material rapidly (Markwood); to stretch PTFE to increase porosity (Sumitomo); and to stretch at high temperatures (Smith). The result is that the claims were used as a frame, and individual, naked parts of separate prior art references were employed as a mosaic to recreate a facsimile of the claimed invention. At no point did the district court, nor does Garlock, explain why that mosaic would have been obvious to one skilled in the art in 1969, or what there was in the prior art that would have caused those skilled in the art to disregard the teachings there found against making just such a mosaic. On the contrary, the references and the uncontested testimony, as above indicated, established that PTFE is *sui generis*. It is not surprising, therefore, that, unlike the situation in *Stratoflex, Inc. v. Aeroquip Corp.*, 218 USPQ 871 (Fed. Cir. 1983), there was no testimony and no finding that one skilled in the art would transfer conventional thermoplastic processes to those for unsintered PTFE, or would have been able to predict what would happen if they did.

[17] To imbue one of ordinary skill in the art with knowledge of the invention in suit,

1. with decreased crystallinity. At 300°C it is *not possible* to attain an about 4X [times] and draw ratios can be attained and below the polymer's melting point with resultant improved properties it is pre-temperatures at or above the talline melting point. (Em-

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the record and in view of all ch in its entirety, it is clear f ordinary skill confronted pe breakage problem would ed the rate of stretching; or mperature to decrease the Gore did neither. He pro- o the accepted wisdom of the natically increasing the rate tch and retaining crystallin- strong evidence of nonob- l States v. Adams, 383 U.S.

d the details of Dr. Gore's strict court found it within art to stretch other material ood); to stretch PTFE to in- Sumitomo); and to stretch at s (Smith). The result is that ased as a frame, and individ- of separate prior art refer- oyed as a mosaic to recreate a claimed invention. At no point court, nor does Garlock, ex- mosaic would have been obvi- d in the art in 1969, or what e prior art that would have led in the art to disregard the found against making just n the contrary, the references ted testimony, as above indi- l that PTFE is sui generis. It s, therefore, that, unlike the ratoflex, Inc. v. Aeroquip Q 871 (Fed. Cir. 1983), there y and no finding: that one would transfer conventional ocesses to those for unsin- r would have been able to uld happen if they did. e one of ordinary skill in the dge of the invention in suit,

when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.

[18] It is difficult but necessary that the decisionmaker forget what he or she has been taught at trial about the claimed invention and cast the mind back to the time the invention was made (often as here many years), to occupy the mind of one skilled in the art who is presented only with the references, and who is normally guided by the then-accepted wisdom in the art. Had that been here done the inventions set forth in the claims 3 and 19 of the '566 patent could only have been held non-obvious to those skilled in the art at the time those claimed inventions were made.

[19] Error in visualizing the burden of proof on obviousness may have contributed to the court's application here of the prior art. Adopting the phrase from earlier precedents, the court said "the presumption [of validity] is weakened greatly where the Patent Office has failed to consider pertinent prior art." That is not the law of established precedent in this court. *SSIH Equipment S.A. v. ITC*, 218 USPQ 678, 687 (Fed. Cir. 1983); *Solder Removal Co. v. ITC*, 582 F.2d 628, 633, 199 USPQ 129, 133, n. 9 (CCPA 1978). The presumption has no separate evidentiary value. It cautions the decisionmaker against a rush to conclude invalidity. Submission of additional art that is merely "pertinent" does not dispel that caution. It is difficult to imagine a patent law suit in which an accused infringer is unable to add some new "pertinent" art. The inescapable burden of persuasion on one who would prove invalidity, however, remains throughout the trial. 35 U.S.C. §282.

[20] The burden of proving invalidity may of course be facilitated by prior art that is *more pertinent* than that considered by the PTO. That did not happen here. In the present case, Sumitomo, Smith, and the '915 patent were among references considered by the PTO. Other references referred to as not considered were merely cumulative; disclosing nothing not disclosed in references that were considered by the PTO. The Canadian counterpart of Nash was considered by the PTO. The relevant disclosures of Markwood appear in Sandiford patent 3,544,671 and Paratheon patent 3,637,906, both considered by the PTO. The Russian Author's Certificate 240,997, assuming its status as prior art and whatever the material with which it dealt, contributed nothing beyond the teachings of the '915 patent considered by the PTO.

[21] As discussed more fully below, the district court erred in specifically declining to

consider the objective evidence of nonobviousness. In *re Sernaker*, 702 F.2d 989, 996, 217 USPQ 1, 7 (Fed. Cir. 1983). That evidence can often serve as insurance against the insidious attraction of the siren hindsight when confronted with a difficult task of evaluating the prior art. Though the prior art evidence here pointed more in the direction of nonobviousness than obviousness, the objective evidence may tend, as it did in *Sernaker*, supra, to reassure the decisionmaker.

In sum, the district court erred as a matter of law on this record in concluding that Garlock had met its burden of proving that the inventions of claims 3 and 19 of the '566 patent would have been obvious.

(b) '390 patent

(i) §102

The district court found product claims 1, 9, 12, 14, 18 and 43 inherently anticipated because it found that the microstructure of nodes interconnected by fibrils is an inherent characteristic of paste-extruded PTFE products resulting from the process disclosed in Smith. The court found the first four of those claims and claim 43, plus claims 35, 36, 67 and 77 inherently anticipated because high strength PTFE products are inherent in the examples of Sumitomo.

The teachings of Smith include neither a disclosure nor a suggestion of "porous" products having a "microstructure characterized by nodes interconnected by fibrils" as required by the claims found to have been anticipated by Smith.

The teachings of Sumitomo do not include a disclosure of products having "a matrix tensile strength *** above about 7,300 psi" as required by the claims found to have been anticipated by Sumitomo.

[22] Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration. *Soundscribe Corp. v. U.S.*, 360 F.2d 954, 960, 148 USPQ 298, 301, adopted, 149 USPQ 640 (Ct. Cl. 1966). Neither Smith nor Sumitomo disclose an invention set forth in any claim of the '390 patent.

The incongruity in findings that the different processes of Smith and Sumitomo each inherently produced identical products is striking.

Garlock attempted with expert testimony to overcome the prior art shortcomings as proof of anticipation. Gore rebutted with its own expert testimony. It is unnecessary, however, to resolve apparent conflicts in the divergent testimony, much if not all of which took

the form of pure unsupported assertion. No inter partes tests in which the Smith and Sumitomo processes were conducted are of record. No products of those processes were placed in evidence, and there was, of course, no analysis of any such evidentiary products.

Nor is it necessary to evaluate the inappropriate disparagement in Garlock's brief of Dr. Sperati as a "friend" of Gore.

[23] Given the unique nature of unsintered PTFE, we are not persuaded that the "effect" of the processes disclosed in Smith and Sumitomo, an "effect" undisclosed in those patents, would be always to inherently produce or be seen always to produce products meeting all of the claim limitations. Anticipation of inventions set forth in product claims cannot be predicated on mere conjecture respecting the characteristics of products that might result from the practice of processes disclosed in references. In re Felton, 484 F.2d 495, 500, 179 USPQ 295, 298 (CCPA 1973). It is clear that the teachings of neither Smith nor Sumitomo place the products claimed in the '390 patent in possession of the public.

The teachings of Smith and Sumitomo are so unacceptably vague concerning characteristics of products produced by their respective processes as not to support an anticipation rejection. That fact is confirmed by the PTO's having fully considered those references and by its having issued the '390 patent over them.

[24] Garlock's assertion that it employs a process covered by the Smith patent, if true, is irrelevant. The '390 patent was allowed over Smith as a reference. Assuming Smith is a dominating patent, the rule of law is clear that an accused infringer's employment of the process of a dominating patent does not render that employment an anticipation of an invention described and claimed in an improvement patent. As indicated, there is no present record basis for finding that the Smith process in itself necessarily and inherently results in the products, each considered in its entirety, in the claims of the '390 patent. The testimony of Garlock's expert about ex parte tests, the records of which he destroyed before trial, cannot serve as such a basis. The effusive praise of Dr. Gore's claimed products by the owner of the Smith patented process would appear, on the contrary, to confirm the action of the PTO in issuing the '390 patent.

Garlock has not met its burden of showing that claims 1, 9, 12, 14, 18, and 43 are anticipated by Smith or that claims 1, 9, 12, 14, 35, 36, 43, 67, and 77 are anticipated by Sumitomo.

(ii) §103

[25] The scope and content of the prior art and level of ordinary skill, discussed above in relation to the '566 patent, would be the same for the '390 patent. The district court did not, however, nor does Garlock, apply the Graham criteria, supra, to the '390 claims, apparently assuming that the claimed products, having been found inherent in the processes of Sumitomo and Smith, would have been obvious in view of those references. If so, that was error. Inherency and obviousness are distinct concepts. In re Spormann, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966).

In discussing inherency the district court did recognize differences between Smith's disclosure and the inventions set forth in claims 1, 9, 12, 14, 18, and 43, i.e., the absence from Smith of a description of the products of Smith's process as porous and the absence from Smith of a disclosure that those products have a microstructure characterized by nodes interconnected by fibrils.

Similarly, a difference between Sumitomo's disclosure and the inventions set forth in claims 1, 9, 12, 14, 35, 36, 43, 67, and 77 was recognized in the absence from Sumitomo of a quantification of the matrix tensile strengths of the products of Sumitomo's process. The district court also discussed differences between the dependent claims and the prior art. Because we conclude that the independent claims of the '390 patent are patentable over the art of record, we need not discuss the dependent claims.

[26] Having determined that the invention would have been obvious in view of the process of either Smith or Sumitomo, the district court did not discuss the strong showing of objective evidence of nonobviousness here present, saying with respect to one part of such evidence, "no amount of commercial success can save it." That approach was error. All evidence bearing on the issue of obviousness, as with any other issue raised in the conduct of the judicial process, must be considered and evaluated before the required legal conclusion is reached. Stratoflex, supra, 218 USPQ at 879.

[27] The objective evidence of nonobviousness, i.e., the "indicia" of Graham, supra, may in a given case be entitled to more weight or less, depending on its nature and its relationship to the merits of the invention. It may be the most pertinent, probative, and revealing evidence available to aid in reaching a conclusion on the obvious/nonobvious issue. It should when present always be considered as an integral part of the analysis.

Gore's fabric laminates, for example, as set forth in claims 36 and 77, satisfied a long-felt

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d content of the prior art skill, discussed above in patent, would be the same. The district court did not, Garlock, apply the *Graham* to the '390 claims, apparently the claimed products, inherent in the processes Smith, would have been those references. If so, that cy and obviousness are *re Spormann*, 363 F.2d 449, 452 (CCPA 1966). Precedence the district court takes between Smith's disclosures set forth in claims 43, i.e., the absence from the products of porous and the absence of assurance that those products are characterized by nodes or orils.

ence between Sumitomo's inventions set forth in 5, 36, 43, 67, and 77 was evidence from Sumitomo of a matrix tensile strengths Sumitomo's process. The discussed differences between claims and the prior art lead to the independent patent are patentable over we need not discuss the

mined that the invention obvious in view of the prior Sumitomo, the district court's strong showing of nonobviousness here precludes to one part of such amount of commercial success approach was error. All the issue of obviousness, sue raised in the conduct, must be considered and required legal conclusion *ex*, supra, 218 USPQ at

evidence of nonobviousness of *Graham*, supra, be entitled to more weight in its nature and its relations of the invention. It may at, probative, and revealing to aid in reaching a obvious/nonobvious issue. ent always be considered of the analysis.

inates, for example, as set id 77, satisfied a long-felt

need for a material having the contradictory properties of being simultaneously breathable (allowing water vapor or perspiration to pass) and waterproof. The record establishes that such a material had long been sought by makers of rainwear and outerwear, and by the U.S. Army as well. That Gore's fabric laminates filled that need is attested by the rise in their annual dollar sales from zero to seven million in the first five years of their availability.

Gore's PTFE tubes for replacement of human arteries and veins, also satisfied a long-felt need. The uncontradicted evidence establishes that Gore's PTFE tubes hold blood without leaking, need not be pre-clotted with the patient's blood, are chemically inert, and, being breathable, are less likely to cause an air embolism. The value and uniqueness of those four properties make Gore's PTFE tubes, as described in unchallenged testimony, "the most important synthetic material presently existing" in vascular surgery, and, along with other evidence in the record, reflect the intended working of the patent system.

As discussed above, current annual sales of over sixty million dollars are attributable to the merits of the products claimed in the '390 patent. Considering the long-felt need for those products and the obvious commercial advantage to be gained by meeting that need, it is reasonable to conclude that the claimed products of the '390 patent would not have been obvious to persons of ordinary skill in the art at the time the claimed inventions were made.

[28] As above indicated, the praise which greeted the products claimed in the '390 patent from PTFE suppliers, including the owner of the Smith patent, is further objective evidence of nonobviousness.

[29] Garlock's appeal argument that the '390 claims are invalid because the recited minimum matrix tensile strengths are not "critical" is without merit. A claim to a new product is not legally required to include critical limitations. In *re Miller*, 441 F.2d 689, 696, 169 USPQ 597, 602 (CCPA 1971). The '390 claims are not drawn to optimization of ingredients or ranges within broad prior art teachings, but to new porous PTFE products of particular characteristics.

In sum, and in view of the difficulty of working with unsintered PTFE and its unpredictable response to various processing techniques, the vagueness of Smith and Sumitomo concerning the products produced by those processes, the filling of at least two long-felt needs and the commercial success described above, we conclude that the inventions set forth in claims 1, 9, 12, 14, 18, 35, 36, 43, 67, and 77 of the '390 patent would

not have been obvious to those skilled in the art at the time those inventions were made.

(c) §112 and the '566 and '390 patents

The patents in suit resulted from a single application and thus have substantially identical specifications. The holding of invalidity on the basis of §112 is common to both patents.

The district court found that the patents did not disclose sufficient information to enable a person of ordinary skill in the art to make and use the invention, as required by §112, first paragraph, and that certain claim language was indefinite, presumably in light of §112, second paragraph, because: (1) there was no definition in the specification of "stretch rate," different formulae for computing stretch rate having been developed and presented at trial; (2) there was no way taught in the specification to calculate the minimum rate of stretch above 35°C; (3) the phrase "matrix tensile strength" is indefinite; and (4) the phrase "specific gravity of the solid polymer" is indefinite.

[30] The findings rest on a misinterpretation of §112, its function and purpose. The district court considered whether certain terms would have been enabling to the public and looked to formula developments and publications occurring well after Dr. Gore's filing date in reaching its conclusions under §112. Patents, however, are written to enable those skilled in the art to practice the invention, not the public. In *re Storrs*, 245 F.2d 474, 478, 114 USPQ 293, 296-97 (CCPA 1957), and §112 speaks as of the application filing date, not as of the time of trial. In *re Mott*, 539 F.2d 1291, 1296, 190 USPQ 536, 541 (CCPA 1976). There was no evidence and no finding that those skilled in the art would have found the specification non-enabling or the claim language indefinite on May 21, 1970, when the application which resulted in issuance of Dr. Gore's patents was filed. Indeed, the expert quoted by the district court and whose testimony was primarily relied upon respecting formulae, was still in school at that time.

There is uncontradicted evidence in the record that at the time the application was filed "stretch rate" meant to those skilled in the art the percent of stretch divided by the time of stretching, and that the latter was measurable, for example, with a stopwatch. Concern for the absence from the specification of a formula for calculating stretch rate is therefore misplaced, and the post-filing date development of varying formulae, including Dr. Gore's later addition of a formula in his corresponding Japanese patent, is irrelevant.

[31] Section 112 requires that the inventor set forth the best mode of practicing the invention known to him at the time the application was filed. Calculating stretch rate at that time was accomplished by actually measuring the time required to stretch the PTFE material. That was the only mode then used by the inventor, and it worked. The record establishes that calculation by that mode would have been employed by those of ordinary skill in the art at the time the application was filed. As indicated, Dr. Gore's disclosure must be examined for §112 compliance in light of knowledge extant in the art on his application filing date.

[32] The district court, though discussing enablement, spoke also of indefiniteness of "stretch rate," a matter having to do with §112, second paragraph, and relevant in assessment of infringement. The use of "stretching: * * * at a rate exceeding about 10% per second" in the claims is not indefinite. Infringement is clearly assessable through use of a stopwatch. No witness said that could not be done. As above indicated, subsequently developed and therefore irrelevant formulae cannot be used to render non-enabling or indefinite that which was enabling and definite at the time the application was filed.

[33] Similarly, absence from the specification of a method for calculating the minimum rate of stretch above 35°C does not render the specification non-enabling. The specification discloses that "[t]he lower limit of expansion rates interact with temperature in a roughly logarithmic fashion, being much higher at higher temperatures." Calculation of minimum stretch rate above 35°C is nowhere in the claims, and it is the *claimed* invention for which enablement is required. The claims require stretching at a rate greater than 10% per second at temperatures between 35°C and the crystalline melt point of unsintered PTFE. That the minimum rate of stretch may increase with temperature does not render non-enabling Dr. Gore's specification, particularly in the absence of convincing evidence that those skilled in the art would have found it non-enabling at the time the application was filed.

[34] The district court invalidated both patents for indefiniteness because of its view that some "trial and error" would be needed to determine the "lower limits" of stretch rate above 10% per second at various temperatures above 35°C. That was error. Assuming some experimentation were needed, a patent is not invalid because of a need for experimentation. *Minerals Separation, Ltd. v. Hyde*, 242 U.S. 261, 270-71 (1916). A patent is invalid only when those skilled in the art are required to

engage in *undue* experimentation to practice the invention. *In re Angstadt*, 537 F.2d 498; 503-04, 190 USPQ 214, 218 (CCPA 1976). There was no evidence and the court made no finding that undue experimentation was required.

[35] Moreover, the finding here rested on confusion of the role of the specification with that of the claims. The court found that the specification's failure to state the lower limit of stretch rate (albeit above 10% per second) at each degree of temperature above 35°C (a requirement for at least hundreds of entries in the specification) did not "distinguish processes performed above the 'lower limit' from those performed below the 'lower limit'." The claims of the '390 patent say nothing of processes and lower limits. Distinguishing what infringes from what doesn't is the role of the claims, not of the specification. It is clear that the specification is enabling. *In re Storrs*, *supra*, and that the claims of both patents are precise within the requirements of the law. *In re Moore*, 439 F.2d 1232, 169 USPQ 236 (CCPA 1971).

[36] The finding that "matrix tensile strength" is indefinite, like the other findings under §112, appears to rest on a confusion concerning the roles of the claims and the specification. While finding "matrix tensile strength" in the claims indefinite, the district court at the same time recognized that the specification itself disclosed how to compute matrix tensile strength, in stating "to compute matrix tensile strength of a porous specimen, one divides the maximum force required to break the sample by the cross sectional area of the porous sample, and then multiplies this quantity by the ratio of the specific gravity of the solid polymer divided by the specific gravity of the porous specimen." Further, the specification provided the actual matrix tensile strength in several examples. It is well settled that a patent applicant may be his own lexicographer. In light of the disclosure of its calculation in the specification, we cannot agree that "matrix tensile strength" is either indefinite or non-enabling.

Nor does absence from the specification of a definition for "specific gravity of the solid polymer," a part of the computation of matrix tensile strength, render that computation indefinite. It is undisputed that in the many examples in the application the specific gravity values used for unsintered and sintered PTFE were 2.3 and 2.2, respectively. There was no testimony that those values were not known to persons of ordinary skill in the art or could not be calculated or measured. There is simply no support for the conclusion that "specific gravity of the solid polymer" is indefinite or that absence of its definition ren-

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ders the specification non-enabling. See *In re Wertheim*, 541 F.2d 257; 191 USPQ 90 (CCPA 1976).

We conclude that Garlock has failed to prove that at the time the application was filed, the specification was not enabling or that the claims were indefinite within the meaning of §112.

(2) Fraud

[37] Fraud must be shown by clear and convincing evidence. *Norton v. Curtiss*, 433 F.2d 779, 797, 167 USPQ 532, 546-47 (CCPA 1970).

The state of mind of the one making the representations is probably the most important of the elements to be considered in determining the existence of "fraud." *** Good faith and subjective intent, while they are to be considered, should not necessarily be made controlling. Under ordinary circumstances, the fact of misrepresentation coupled with proof that the party making it had knowledge of its falsity is enough to warrant drawing the inference that there was a fraudulent intent. Where public policy demands a complete and accurate disclosure it may suffice to show nothing more than that the misrepresentations were made in an atmosphere of gross negligence as to their truth. [emphasis in original].

Norton, 433 F.2d at 795-96; 167 USPQ at 545; see, *Miller, Fraud on the PTO*, 58 JPOS 271 (1976).

Garlock alleges fraud in Gore's representations that stretching PTFE tape at a rate greater than 10% per second was novel and that it produces a physical phenomenon. The district court found the evidence insufficient to establish that Gore had a specific intent to defraud the PTO. No basis exists for our overturning that finding. Accordingly, we agree with the district court that Garlock has failed to sustain its heavy burden of proving, by clear and convincing evidence, sufficient facts from which fraudulent intent can be inferred.

Garlock points to a September 4, 1975, Gore affidavit filed in the PTO that stated:

2. Prior to my invention disclosed in the captioned patent application, during production of expanded PTFE products by W. L. Gore & Associates, Inc., the rate of stretching was neither measured nor controlled, and to my knowledge did not involve stretching of unsintered PTFE at a rate exceeding about 10% per second. (emphasis in original)

No finding of the district court and no evidence of record establishes that that state-

ment was made in reckless disregard of facts from which an intent to defraud may be inferred.

The district court's finding in 1982 that the 401 machine inherently stretched tape at some time in 1969 at a rate more than 10% per second, does not establish that Dr. Gore was aware of that fact in 1975, nor does it make untrue his statement that to his knowledge that had not been the rate of stretch employed. Nor does the district court's finding conflict with Dr. Gore's statement that the rate of stretching was neither measured nor controlled in the Gore shop before his invention of the claimed process as a whole.

Nor does the evidence of isolated statements support Garlock's contention that Dr. Gore attempted to convince the PTO that a physical phenomenon always existed in which stretching at a rate greater than 10% per second always produced a matrix tensile strength greater than 7300 psi. On the contrary, Dr. Gore set forth in his specification examples indicating that some samples broke, ruptured, or disintegrated.

(3) Attorney's Fees

The district court did not abuse its discretion in denying Garlock its request for attorney fees.

Infringement

[38] Where, as here, an appellate court reverses a holding of invalidity, and remand is ordered for trial of the factual issue of infringement, an inefficient use of judicial resources results if the second judgment is appealed. The better practice would therefore be for the district court to decide both the validity and infringement issues when both are contested at the trial, enabling the conduct of a single appeal and disposition of the entire case in a single appellate opinion.

Resolution of the infringement issue at trial may also overlap with resolution of the validity issue, where, for example, the claimed invention was or was not copied by the validity challenger, or the challenger substituted the claimed invention for freely available prior art processes or products, *Eibel*, supra, 261 U.S. at 56, or an assertion of nonenablement may conflict with the ease with which the accused infringer may be shown to have practiced the invention as taught in the patent. *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45, 61 (1923).

[39] The district court having declined to decide the infringement issue, Gore suggests that the record here is sufficient to warrant

our deciding it now. With reluctance in view of the length and bitter nature of the present litigation, we decline the suggestion. In so doing, we imply nothing of our view on the issue. Nor do we intend any implication that the district court could not itself determine the infringement issue on the present record. Infringement of particular claims of two patents was asserted. None of those claims has been finally held invalid. Assuming their continued assertion, infringement must be decided with respect to each asserted claim as a separate entity. *Altoona*, supra, 294 U.S. at 487. Those factual determinations should be made in the first instance by the district court.

Decision

The holdings of invalidity of claim 1 of the '566 patent under §102(a) and of claim 17 of the '566 patent under §103, the determination that Gore did not commit fraud on the PTO, and the denial of attorney fees, are affirmed; the holdings that all claims of the '566 patent are invalid under §102(b), that claims 3 and 19 of the '566 patent are invalid under §103, and that all claims of the '566 patent are invalid under §112, are reversed. The holdings that claims 1, 9, 12, 14, 18, 35, 36, 43, 67, and 77 of the '390 patent are invalid under §§102 and 103, and that all claims of the '390 patent are invalid under §112, are reversed. The case is remanded for determination of the infringement issue.

Affirmed in part, reversed in part, and remanded.

Appendix

Claims of the '566 patent discussed at trial:

1. A process for the production of a porous article of manufacture of a polymer of tetrafluoroethylene which process comprises expanding a shaped article consisting essentially of highly crystalline poly (tetrafluoroethylene) made by a paste-forming extrusion technique, after removal of lubricant, by stretching said unsintered shaped article at a rate exceeding about 10% per second and maintaining said shaped article at a temperature between about 35°C. and the crystalline melt point of said tetrafluoroethylene polymer during said stretching.

3. The process of claim 1 in which the rate of stretch is about 100% per second.

17. The process of claim 1 in which the shaped article is expanded such that its final length in the direction of expansion is greater than about twice the original length.

19. The process of claim 17 in which said final length is greater than about five times the original length.

Claims of the '390 patent discussed at trial:

1. A porous material consisting essentially of highly crystalline polytetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils and has a matrix tensile strength in at least one direction above about 73,000 psi.

9. A porous material consisting essentially of polytetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils and has a matrix tensile strength in at least one direction above 9290 psi, which material has been heated to a temperature above the crystalline melt point of said polymer and has a crystallinity below about 95%.

12. A porous material in accordance with claim 9 which is in the form of a shaped article.

14. A product in accordance with claim 12 which is in the form of a film.

18. A product in accordance with claim 12 which is in the form of continuous filaments.

35. A laminated structure comprising (a) a first shaped article formed of a porous material made of a tetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils and has a matrix tensile strength in at least one direction above about 7,300 psi, and (b) a second shaped article bonded to said first shaped article.

36. The structure of claim 35 in which said first shaped article is formed of a porous material which has a matrix tensile strength in at least one direction of at least 9290 psi, and has a crystallinity below about 95%.

43. A porous material made of a tetrafluoroethylene polymer, which material has a microstructure characterized by nodes interconnected by fibrils, which material (a) has a matrix tensile strength in at least one direction above about 9290 psi, (b) has been heated to a temperature above 327°C. and has a crystallinity below about 95%, and (c) has a dielectric constant of 1.2-1.8.

67. An impregnated structure comprising

(a) a shaped article formed of a porous material made of a tetrafluoroethylene polymer which material has a microstructure characterized by nodes interconnected by fibrils and a matrix tensile strength in at least one direction above about 9290 psi, and

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"The factor of the rate of stretching was of direct interest to the examiner: during the prosecution of the '566 patent. In response to the examiner's express request for a declaration that the Gore firm's production of stretched PTFE tape, prior to Robert Gore's invention asserted here, did not involve stretching of unsintered PTFE at a rate exceeding about 10% per second, Robert Gore filed an affidavit in the PTO specifically stating that "*to my knowledge*" (emphasis added) the 401 machine did not involve stretching at a rate exceeding about 10% per second.

cannot properly overturn that finding. But the absence of personal intent to defraud does not mean or say that, whether Robert Gore realized it or not, the 401 machine was not actually operating, well before October 1969, to stretch unsintered PTFE at a rate exceeding about 10% per second. Cf. *O'Brien v. Westinghouse Electric Corp.*, 293 F.2d 1, 10 (3rd Cir. 1961). It seems impossible to me to reconcile Robert Gore's insistence on two facts—that (i) he invented the process in October 1969 and (ii) he had no knowledge prior to October 1969 of stretching PTFE at the critical rate—with the solid facts in the record as to the prior operation of the 401 machine, except on the view that Robert Gore did not realize that he and others in the Gore shop had made his invention previously.

2. It follows that in October 1969 the invention of '566 would have been obvious under §103 to Robert Gore because the prior practice of the 401 machine constituted prior art. Even if this was not prior art technically within §102, that statutory provision "is not the only source of prior art." In *re Fout*, 675 F.2d 297, 300 (CCPA 1982, emphasis in original). The 401 machine was practiced under the '915 patent (issued to Wilbert Gore) and, whether or not Robert Gore subjectively realized what was happening, he and others in the Gore shop were practicing the invention later embodied in the '566 patent. That was prior art at least as to Robert Gore. *Id.* at 300-01.

3. If it be thought necessary to invoke §102 directly, in order to show anticipation, the record contains proof that the 401 machine was designed, constructed and used (just as described supra) in November and December 1968 and the early months of 1969—more than one year prior to the '566 patent application of May 21, 1970. See *Jt. App. E 1199-E 1200*. Section 102(b) therefore applies. Although commercial production was apparently not actively sought until June 1969, the practicing of the 401 machine prior to May 21, 1969 was "a public use" because the Gore company made "use of the device *** in the factory in the regular course of business." *Connecticut Valley Enterprises, Inc. v. United States*, 348 F.2d 949, 952, 146 USPQ 404, 406 (Ct. Cl. 1965).

The District Court has found that there are no differences between claim 1 of the '566 patent and the processes previously used by the Gore firm to produce paste-extruded unsintered PTFE.

4. Also, §102(a)⁸ applies here because Robert Gore was the inventor in the '566 patent and Wilbert Gore and others in the Gore shop were using the 401 machine before October 1969. Wilbert Gore (the inventor in the '915 patent under which the 401 machine was made and used) and the other employees are "others" within §102(a)—they are not the same as Robert Gore who claimed to be inventor of the process that ripened into the '566 patent.⁹ See also §102(f), which would bar Robert Gore if he did not himself invent the subject matter of the '566 patent.¹⁰

5. The majority sustains the validity of claims 3 and 19 of the '566 patent (the claims also involved in appellant's suit for infringement) which are dependent on invalid claim 1. Because of the invalidity of claim 1 the only possible novelty in claim 3 would be the requirement that the rate of stretch would be about 100% per second, and the possible novelty of claim 19 would be that the final length would be greater than about five times the original length. My position is that both of these added elements, if novel, would have been obvious to persons of ordinary skill in the art.

The defect in the majority's analysis is that it neglects the cardinal fact that the prior art included the 401 machine (discussed supra), not merely the earlier patents assessed in the majority opinion. The 401 machine directly involved PTFE itself, not conventional thermoplastic polymers. That machine also directly involved rapid stretching of PTFE at a rate markedly exceeding 10%. With this prior art of the 401 machine before him, an ordinary person skilled in the art would maximize stretch rate, if only to improve the machine's production rate. Cf. *In re Dwyer, Jewell, Johnson, McGrath, & Rubin*, 317 F.2d 203, 207, 137 USPQ 540 (CCPA 1963). Moreover, the very existence and operation of the 401 machine, which stretched PTFE rapidly without breaking, suggests to the skilled person the probability of stretching at even higher rates. Certainly, in the light of the 401 machine, skilled workers would see in at least

⁸ An invention is anticipated if it "was known or used by others in this country *** before the invention thereof by the applicant for patent" (emphasis added).

⁹ It is undisputed that it was Wilbert Gore who initiated the project for the 401 machine and watched over it.

¹⁰ The majority's discussion of "secondary considerations," though it is relevant to other aspects of this case, is irrelevant to the issue of anticipation raised by the 401 machine, and hardly persuasive as to the issues of obviousness based on or with respect to the 401 machine.

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Gore (the inventor in which the 401 machine and the other employees 02(a)--they are not the e who claimed to be s that ripened into the §102(f), which would did not himself invent re '566 patent.¹⁰

ustains the validity of '566 patent (the claims lant's suit for infringe- ndent on invalid claim alidity of claim 1 the n claim 3 would be the ate of stretch would be ond, and the possible ould be that the final er than about five times ly position is that both ts, if novel, would have ons of ordinary skill in

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the prior Markwood, Nash, and Scarlett patents (teaching extensive and rapid stretching of non-PTFE thermoplastics) the suggestion that the method of the 401 machine could also be used for comparable rapid and extensive stretching of PTFE.

6. In sum, I cannot escape the conclusion that--although there was no fraud proved--if the true facts as to the 401 machine had been made known to the PTO (as it requested), the involved claims of the '566 patent should (and probably would) not have been accepted.

Court of Appeals, Second Circuit

Harper & Row, Publishers, Inc. et al.
v. Nation Enterprises et al.

Nos. 83-7277 and 83-7327

Decided Nov. 17, 1983

COPYRIGHTS

1. In general (§24.01)

Copyright Act sets out test for preemption of state statutory or common law that may conflict with federal policies embodied in Act.

2. Matter copyrightable — Classes in statute (§24.303)

Work of authorship in which rights are claimed must fall within "subject matter of copyright" as defined in Copyright Act Sections 102 and 103; Act embraces "works of authorship," including "literary works," as within its subject matter.

3. Matter copyrightable — In general (§24.301)

Fact that portions of memoirs may consist of uncopyrightable material does not take work as whole outside subject matter protected by Copyright Act; were this not so, states would be free to expand perimeters of copyright protection to their own liking, on theory that preemption would be no bar to state protection of material not meeting federal statutory standards; that interpretation would run directly afoul of one of Act's central purposes, to avoid development of any vague borderline areas between state and federal protection.

4. In general (§24.01)

Copyright Act requires that state law create legal or equitable rights that are equiv-

alent to any of exclusive rights within general scope of copyright as specified in Section 106 if it is to be preempted; these include rights to reproduce copyrighted work in copies, and to prepare derivative works based upon copyrighted work; when right defined by state law may be abridged by act that, in and of itself, would infringe one of exclusive rights, state law in question must be deemed preempted; conversely, when state law violation is predicated upon act incorporating elements beyond mere reproduction or the like, rights involved are not equivalent, and preemption will not occur.

5. Rights embraced in copyright (§24.50)

There is no qualitative difference between right of author and his licensed publishers to exercise and enjoy benefit of pre-book publication serialization rights, and exclusive right under Copyright Act of preparing derivative works based on copyrighted work; enjoyment of benefits from derivative use is so intimately bound up with right itself it could not possibly be deemed separate element.

6. In general (§24.01)

Fact that plaintiffs pleaded additional elements of awareness and intentional interference, not part of copyright infringement claim, in support of state law claim, goes merely to scope of right; it does not establish qualitatively different conduct on part of infringing party, nor fundamental non-equivalence between state and federal rights implicated.

7. Matter copyrightable — In general (§24.301)

Copyright Act protects only original works of authors; it grants rights not in ideas or facts, but in expression; one reasonable interpretation of word "discovery" in statute is "fact"; for example, historian who learns in his research that certain event has occurred has discovered fact; copyright does not preclude others from using ideas or information revealed by author's work; Act is thus able to protect authors without impeding public's access to information that gives meaning to our society's highly valued freedom of expression; neither news events, historical facts, nor facts of biographical nature are deserving of Act's protection; listing of names, nouns, or information is indisputably copyrightable as compilation, but preexisting facts contained in those lists are not protected.

8. Matter copyrightable — In general (§24.301)

Distinction between fact and expression is not always easy to draw; author's originality